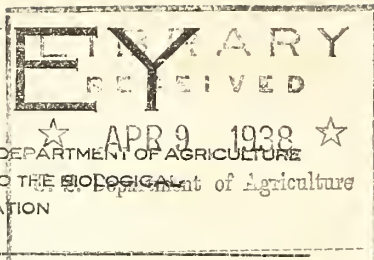


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THE SURVEY



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GENERAL NOTES

Bureau Organization Changed.--With a view to economy of operation, increased efficiency, and better coordination of activities, Dr. Gabrielson has replaced the Divisions of Game Management and Migratory Waterfowl with four divisions--Predator and Rodent Control, Wildlife Refuges, Construction and C. C. C. Operations, and Game Management. The change took effect February 1. The Divisions of Wildlife Research, Land Acquisition, Administration, and Public Relations remain unchanged.

These changes, explain the Chief, have been brought about because of greatly increased responsibilities and activities in Federal wildlife administration. They are the first to be made in the Washington office since Dr. Gabrielson became Chief on November 16, 1935, and are based on his 20 years' experience in various lines of this Bureau's work as well as on his observations since becoming Chief.

Stanley P. Young heads the new Division of Predator and Rodent Control. Federal appropriations for control work have been increased in recent years, and cooperative and emergency funds have added other large amounts for its work. Mr. Young has been chief of the Division of Game Management, which included control activities.

Albert M. Day, who for the past three years has been in direct charge of predator and rodent control, is now assisting in preliminary work pertaining to the administration of the recent act authorizing Federal aid to States in wildlife restoration. He has been temporarily assigned to the Office of the Chief.

J. Clark Salyer, chief of the Division of Migratory Waterfowl, heads the new Division of Wildlife Refuges, which will administer the big-game preserves and wildlife ranges formerly under the Division of Game Management, as well as the waterfowl and other bird refuges already under Mr. Salyer's supervision. Mr. Earnshaw will continue in immediate supervisory charge of the big-game preserves and wildlife ranges in the Division of Wildlife Refuges. A. C. Elmer remains as assistant chief of this division.

The new Division of Construction and C. C. C. Operations, will be in charge of Hugh W. Terhune, one time representative of the Bureau in Alaska and member of the Alaska Game Commission and recently superintendent of the White River Migratory Waterfowl Refuge, Ark. This Division will visa all Bureau plans for major construction work, will be the Bureau's agency in carrying out, through the medium of C. C. C. camps, the general plans of construction proposed by other divisions, and will also supervise construction work under other funds, work formerly largely under the general supervision of Mr. Salyer. The same close cooperation that has existed with the Bureau of Agricultural Engineering will be continued. P. S. Munk Pederson is assistant chief of the division.

Under the direction of W. E. Crouch, formerly in charge of big-game refuges and game-management agents, the Division of Game Management will continue to conduct all activities in administering the Migratory Bird Treaty Act, the Lacey Act, the Alaska Game Law, and all activities under the Migratory Bird Hunting Stamp Act, except those relating to research and refuge maintenance and development. It will handle cases resulting from violations of laws protecting wildlife refuges. Other activities will include issuing of permits for importations of foreign birds and mammals and for the scientific collecting, propagating, and banding of migratory birds. Chester A. Leichhardt, formerly assistant to Mr. Crouch, and later assigned to the Division of Migratory Waterfowl, has returned to the Division of Game Management and will serve as assistant chief. The Section of Law Enforcement and the Section of Importations and Permits headed by Frank P. Callaghan and R. W. Williams, respectively, remain in this division.

Take Part in Wildlife Conference and Outdoor Life Show.--The Chief, Associate Chief Henderson, and other members of the Biological Survey participated in the third annual North American Wildlife Conference, held at Baltimore, Md., February 14 to 17, under the auspices of the American Wildlife Institute. Dr. Gabrielson explained the "hows and whys" of annual waterfowl regulations and sounded a warning against a return to the old disastrous ways of duck shooting in a general session on this subject on February 16. He pointed out that liberalizing the regulations to conform with the wishes of some hunters would wipe out the gains made the last three years in bringing back larger numbers of waterfowl, and that it would be foolish to spend millions of dollars in rehabilitating marshes and not have any birds to use them.

Other members of the Bureau participating in the general sessions and the subjects they discussed were as follows: Dr. Walter P. Taylor, "Wildlife Research-- Is it a Practical and Necessary Basis for Management?"; A. M. Day, "How the Pittman-Robertson Act Will Operate to Restore Wildlife in the States,"; Dr. Clarence Cottam, "What's Wrong With Mosquito Control?"; Fred C. Lincoln, "What is the Status of Waterfowl?"; F. P. Callaghan, "How Can the States Best Cooperate in Migratory Bird Treaty Act Enforcement?"; J. C. Salyer, "Is the Federal Waterfowl Refuge Program Proceeding Wisely?" Many papers were also presented by Bureau members at the technical sessions.

W. L. McAtee was a member of the technical sessions committee that was named by The Wildlife Society to develop a program for the technical sessions of the wildlife conference. "Ditches and Wildlife," an assembly of Bureau record motion pictures edited and narrated by Howard Zahniser, showing the results of ditching operations for mosquito control on the Atlantic coast, was shown at the general session on February 15, and was followed by a discussion on "What's Wrong With Mosquito Control?"

J. H. "Ding" Darling, former Bureau Chief, was reelected president of the General Wildlife Federation, which changed its name to the National Wildlife Federation.

The conference was held concurrently with the North American Sports, Garden, and Outdoor Life Show, conducted at Baltimore from February 11 to 19, under the auspices of the Maryland Outdoor Life Federation, a member of the National Wildlife Federation. The show proved highly successful from all angles, attracting 134,836 visitors. It included Biological Survey exhibits. Sets, shown under the supervision of Mr. Zahniser, included dioramas demonstrating upland game restoration, waterfowl restoration, and winter feeding and a habitat group of the white-tailed deer. A collection of enlarged photographs of young hawks and owls by John and Frank Craighead was also shown by the Bureau. In an exhibit by the American Wildlife Institute, conducted under the supervision of Lisle Morrison, a display of laboratory equipment and reference collections used by the Bureau's Section of Food Habits was featured. Robert J. McClanahan demonstrated the exhibit to visitors numbering, by actual count, more than 1,300 on one day and averaging about 900 per day during the entire show. Live wild turkeys and bobwhite from the co-operative research and demonstration unit at Blacksburg, Va., were also shown in this exhibit.

Dr. Field Dies.--Dr. George Wilton Field, who was in charge of bird and mammal reservations for the Biological Survey from September 1, 1916, to December 7, 1919, died in Washington, D. C., January 19, at the age of 75. He received A.B. and A.M. from Brown University and from Johns Hopkins, a Ph.D. and had training in Italy and Germany. Dr. Field taught cellular biology in both of the foregoing American institutions but soon turned to economic biology, a subject that in one phase or another engaged his attention the remainder of his life. He began this career as biologist at the Rhode Island Agricultural Experiment Station (1896-1901) and was instructor in the subject at the Massachusetts Institute of Technology, 1901-2. He was employed as biologist by the Massachusetts Commission on Fisheries and Game in 1903 and became chairman of the Commission in 1904, holding that position until 1916. It was during this period that Dr. Field became nationally known not only through attendance at conservation meetings, but also from the sound development of his work in Massachusetts. At this time E. H. Forbush was ornithologist to the Board of Agriculture of the State, and the efforts of these two men put Massachusetts in the forefront of conservation activities. After his period of service with the Biological Survey, Dr. Field held various advisory positions that involved further travel abroad both in Europe and in South America. This work related to pollution problems and to the biological uses of water, subjects in which he had a lifelong interest. With enthusiasm that kept him going when the state of his health would seem to forbid, he attended all hearings on pollution and on water resources, and from his abundant experience prepared testimony and briefs in advocacy of pure water and the economic utilization of the national supply.

Wife of First Bureau Chief Dies.--Mrs. C. Hart Merriam, who as Miss Virginia Elizabeth Gosnell was the first woman to be employed by the Bureau,

died in Washington, D. C., December 7. She served as secretary to Dr. Merriam from the time the Bureau was organized in 1885 until her marriage to him in October 1886. Dr. Merriam, the first Chief of the Survey, served in that capacity for 23 years, and for several years after his resignation in 1910 retained his connection with the Bureau as a consulting biologist. The sympathy of the present staff of the Bureau is extended to Dr. Merriam in his great loss.

Former Chief Redington Retires.--Paul Goodwin Redington, Chief of the Biological Survey from 1927 to 1934, retired from the Forest Service on January 31, after completing more than 34 years of public service. Ill health forced him to retire.

Mr. Redington was made associate chief of the Survey on February 16, 1927, and on the retirement of Dr. E. W. Nelson, on May 9, 1927, he succeeded him as Chief of the Bureau. Prior to joining the Survey he had served the Forest Service in various capacities for 23 years. He returned to the Forest Service on March 1, 1934, and served in the Washington office until he was named supervisor of the Shoshone National Forest. On March 1, 1936, he returned to the Washington office where he served as assistant regional forester of Region 7 until his retirement.

Reviews Work of Fiscal year.--In a radio talk broadcast during the Conservation Day program on the National Farm and Home Hour on December 31, Chief Gabrielson summarized the Bureau's accomplishments during the fiscal year ended June 30, 1937, and pointed out that the conservation and restoration of the nation's wildlife resources depend upon research, regulation of hunting, and the wise use of land.

"Provided we have the necessary regulation of hunting, the increase of our wild creatures," said Dr. Gabrielson, "is dependent almost entirely on the land that we can provide specifically for them and on the way in which we manage all kinds of areas so as to include wildlife. This is true of farm lands and other privately owned lands, as well as areas in public ownership."

Outstanding events in wildlife conservation during the fiscal year and the close relation between farm practices and wildlife management were also outlined by Dr. Gabrielson in a press statement issued on December 31.

Gives Radio Talk.--"Maryland's Stake in Federal Wildlife Work" was the subject of a radio talk by Dr. Gabrielson that was broadcast from Station WFMD, Frederick, Md., on January 14, during the program sponsored by the local Chapter of the Izaak Walton League of America. In this talk the Chief explained the development of the national refuge system and the part the Bureau's law-enforcement activities play in the conservation of wildlife. Later in the evening he addressed a meeting of the League.

Confer on State-Aid Program.--Dr. Gabrielson and A. M. Day were on the West Coast from November 27 to December 30, conferring with State game officials on the act of Congress approved last September that provides Federal Aid to States in wildlife restoration programs. Conferences were held

at Albuquerque, N. Mex.; Los Angeles and San Francisco, Calif.; Portland and Corvallis, Oreg.; and Pocatello, Idaho.

While in San Francisco on December 4, Dr. Gabrielson gave a radio talk on the Federal-State wildlife program, and on December 8, he spoke before the Oregon Wildlife Federation at Corvallis. On December 13, he addressed a conference of county agents at Corvallis, and on December 15, he appeared before the Rotary Club at Pocatello.

On January 10, the Chief and Mr. Day also discussed the State-aid program at a meeting of the Regional Livestock Society at Harrisburg, Pa. On February 12, Dr. Gabrielson addressed the New England game conference at Boston, Mass., on the same subject. Dr. Clarence Cottam, in charge of the Section of Food Habits, and C. M. Aldous, leader of the Maine Cooperative Research Unit, also appeared on the conference program.

Ellsworth's Book Describes Work for Bureau.--In his recent autobiography "Beyond Horizons", Lincoln Ellsworth includes an account of his work for the Biological Survey, studying the distribution of the animal life of North America. He writes: "This meant hunting for science, exploring for new varieties and species, and studying the habits of all creatures of the wild. I entered upon this work with enthusiasm, for it was exactly to my taste. In the three years I remained with the Survey, my job took me from Lower California to Alaska."

ADMINISTRATION

Named Assistant Chief of Division.--S. C. Moore, in charge of the Section of Finances and Accounts, Division of Administration, was recently named an assistant chief of the Division. Thos. E. Jacoby, senior assistant chief, will continue to act in charge of the Division when its chief, W. R. Dillon, is absent. Carey G. Cruikshank, of the Section of Finances and Accounts, will fill the vacancy created by the advancement of Mr. Moore.

Memoranda to Field Officers Issued.--Following is a list of the memoranda issued in the "Administrative Field Office" (Admin. F. O.) series since the last issue (October-December 1937) of the Survey:

- No. 27 Revised (Supplement). Restriction on expenditures for maintenance, upkeep, and repair of Government-owned motor-propelled passenger-carrying vehicles; current factory prices. (November 20.)
- No. 71. Amendment No. 1. Submission of certain itinerary reports with pay rolls. (December 14.)
- No. 94. Amendment No. 2. Granting of leave to Bureau field employees (including CCC.) (November 12.)
- No. 113. Amendment No. 2. Operation of Government-owned motor vehicles by other than Government employees. (November 20.)
- No. 117. Amendment No. 1. Further instructions on the preparation and submission of letter of authorization pay rolls. (December 8.)
- No. 201. Amendment No. 2. Submission of applications for leave by Bureau employees located in regions 1, 2, 3, and 7 (November 18.)
(Issued to regional directors and project leaders in these regions.)

- No. 216. Reporting of fires involving damage to Government property. (December 9.)
- No. 217. Anticipating needs of essential commodities; monthly reports on purchases (consolidated by regional directors). (December 15.)
- No. 218. Federal employees excused from duty on December 24, 1937. (December 15.)
- No. 219. Emergency field printing. (December 22.)
- No. 220. Submission of property inventory reports. (December 23.)
- No. 221. Recording and reporting personal injury and property damage accidents. (December 28.)

The following memoranda to field officers have been issued in "Contracts" series:

- No. 2. Amendment No. 3. Changes in Procurement Division contracts for incandescent electric lamps for the period ending August 31, 1938. (December 4.)
- No. 5. Amendment No. 1. Procurement of batteries for use in Government-owned automobiles (September 1, 1937-August 31, 1938.) (December 14.)
- No. 9. Amendment No. 3. Changes in Procurement Division contracts for tires and tubes for the period ending March 31, 1938. (January 10.)
- No. 11. Supplement. Proposed consolidated contracts for gasoline, fuel oil, and Diesel engine fuel oil requirements in the United States, for the fiscal year 1939. (December 7.)
- No. 14. Blanket, clearance for the purchase of special lubricating oils for Diesel-powered equipment until March 31, 1938. (December 22.)

PUBLIC RELATIONS

Addresses Extension Workers.--Col. Sheldon attended the Utah School for Extension Workers at Logan, January 17 to 20, and on January 19 addressed the school on wildlife conservation and participated in a discussion of that subject. After the meeting, he accompanied Dr. D. I. Rasmussen, leader of the Utah Cooperative Wildlife Research Unit, on a visit to Logan Canyon and also to the Bear River Migratory Bird Refuge. Col. Sheldon reports that the refuge was free from ice and occupied by thousands of waterfowl.

Arranges Exhibit for Foresters Meeting.--Howard Zahniser supervised a Biological Survey exhibit at the 37th annual meeting of the Society of American Foresters, held in Syracuse, N. Y., December 16 to 18. By extending his itinerary slightly it was possible for the Bureau to meet a request for a speaker at Watertown, N. Y., where on December 14, he was the principal speaker at a banquet of the Wasoc Club. He discussed the Biological Survey's work in conducting research, establishing and developing refuges, and regulating the hunting of migratory birds.

Obtains Duck Trap Photographs.--On December 29 and 30, Arthur W. Susott accompanied Regional Director James Silver to Smith Island, Md., and Va., in the Chesapeake Bay and to the Chesconnessex marshes on the eastern shore of Virginia to obtain information and photographs of duck-trapping activities. Law-enforcement officers of the Survey working under the supervision of Mr. Silver destroyed 40 duck traps during the two days, bringing the total number destroyed this season in this section and in the Chincoteague Bay area to nearly 500. Photographs of the duck traps, their destruction by the law-enforcement officers, and the banding of birds found in the traps were taken for the Bureau by M. J. Butzko, of the Section of Illustrations, Office of Information, who was detailed to accompany Mr. Silver and Mr. Susott.

Three Bureau Exhibits Shown in Department Patio.--Three Survey exhibits explaining wild turkey management, waterfowl restoration, and fur farming were among those displayed by the Department in the patio of the Administration Building, January 10 to 22. The exhibits were arranged by Arthur W. Susott, who was assisted by the Division of Land Acquisition in the preparation of labels for identifying the different specimens. Pelts for the fur exhibit were supplied by the Section of Fur Resources.

Exhibits Displayed at Cincinnati Show.--Mr. Susott also supervised the showing of five Bureau wildlife exhibits at the sportsmen's show held at Cincinnati, Ohio, January 26 to February 4, which was attended by more than 60,000 persons. Leo H. Monroe, of the Division of Exhibits, Extension Service, assisted Mr. Susott in erecting and dismantling the exhibits.

Official Publications, copies of which may be obtained from the Division of Public Relations, have been issued as follows:

- Report of the Chief of the Bureau of Biological Survey, 1937. By I. N. Gabrielson. Annual Report, 63 pp. Received Jan. 3, 1938.
- Feeding wildlife in winter. By Wallace B. Grange, formerly Cooperative Agent, Section of Food Habits, Division of Wildlife Research. Farmers' Bulletin No. 1783, 21 pp., Nov. 1937. Received Dec. 11.
- Den hunting as a means of coyote control. By Stanley P. Young, Principal Biologist and Chief of Division, and Harold W. Dobyns, Assistant Leader, Section of Predator and Rodent Control, Division of Game Management. Leaflet No. 132, 8 pp., Oct. 1937. Received Nov. 26.
- Utility of jack rabbit and cottontail skins. By Chas. E. Kellogg, Biologist, Section of Fur Resources, Division of Wildlife Research. Miscellaneous Publication No. 289, 8 pp., Nov. 1937. Received Nov. 23.
- Silver fox pelt prices as affected by time of pelting, sex, and age. By Chas. E. Kellogg, Biologist, Section of Fur Resources, Division of Wildlife Research. Circular No. 460, 28 pp., Dec. 1937. Received Jan. 19, 1938.
- Laws and regulations for the administration of national wildlife refuges. Service and Regulatory Announcements-B. S. 90, 10 pp. Jan. 1938. Received Jan. 28.
- The breeding of fur animals. By Frank G. Ashbrook, Principal Biologist, in Charge Section of Fur Resources, Division of Wildlife Research. Yearbook Sep. No. 1603, pp. 1379-1395. 1937. Received Jan. 14, 1938.

- Blackbirds and rice crop on the Gulf coast. By E. R. Kalmbach, Senior Biologist, Section of Food Habits, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-96, 4 pp., Nov. 1937. Received Dec. 2.
- Disease as a factor in game fluctuation. By J. E. Shillinger, Senior Veterinarian, Section of Disease Control, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-99, 3 pp., Dec. 1937. Received Jan. 5, 1938.
- Principles of breeding rabbits. By George S. Templeton, Director, United States Rabbit Experiment Station, Section of Fur Resources, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-101, 7 pp. Jan. 1938. Received Jan. 13.

Outside Publications.--Articles by members of the Survey appearing in outside publications have been reported as follows:

- Aldous, C. M. Woodcock management studies in Maine. Second North Amer. Wildlife Conf. Trans., pp. 582-588. 1937.
- Aldous, S. E. A hibernating black bear with cubs. Jour. Mammal. 18: 466-468. Nov. 1937.
- Bennett, L. J. Grazing in relation to the nesting of the blue-winged teal. Second North Amer. Wildlife Conf. Trans., pp. 393-397. 1937.
- (With Kate LeMar, junior author.) A marsh-nesting colony of black-crowned night herons. Iowa Bird Life 7 (4): 44-46, illus. Dec. 1937.
- Bennett, W. W. Breeding of the cinnamon teal in Garden County, Nebraska. Nebr. Bird Rev. 5: 108-109. Oct. 1937.
- Blakey, H. L. Wild turkey management on the Missouri Ozark range. Second North Amer. Wildlife Conf. Trans., pp. 494-498. 1937.
- Bode, I. T. Extension work in wildlife restoration. Second North Amer. Wildlife Conf. Trans., pp. 62-67. 1937.
- Bruce, J. A. Sorex longirostris longirostris in Augusta County, Virginia. Jour. Mammal. 18: 513-514. Nov. 1937.
- Cottam, C., and Nelson, A. L. Winter nesting and winter food of the barn owl in South Carolina. Wilson Bull. 49: 283-285. Dec. 1937.
- Couch, L. K. Research units annual report shows progress. Amer. Wildlife 26 (5): 70, 76, 77, illus. Sept./Oct. 1937.
- Dalke, P. D. A preliminary report of the New England cottontail studies. Second North Amer. Wildlife Conf. Trans., pp. 542-548. 1937.
- Day, A. M. Sylvatic plague. Second North Amer. Wildlife Conf. Trans., pp. 555-560. 1937.
- Einarsen, A. S. Educational phases of conservation research. Second North Amer. Wildlife Conf. Trans., pp. 119-125. 1937.
- Gabrielson, I. N. The work of the Biological Survey. Second North Amer. Wildlife Conf. Trans., pp. 145-153. 1937.
- The need of research. Amer. Wildlife 26 (5): 71, 78, illus. Sept./Oct. 1937.
- Game as a cash crop. Southern Planter 98 (11): 4, 14, 15, illus. Nov. 1937.

- Garlough, F. E. Research studies in the control of destructive mammals. Second North Amer. Wildlife Conf. Trans., pp. 303-310. 1937.
- Goldman, E. A. New rodents from Middle America. Jour. Wash. Acad. Sci. 27: 418-423. Oct. 15, 1937.
- The Colorado River as a barrier in mammalian distribution. Jour. Mammal. 18: 427-435. Nov. 1937.
- Four new mammals from Utah. Proc. Biol. Soc. Wash. 50: 221-225, Dec. 28, 1937.
- Green, D. D., and Oderkirk, G. C. The Biological Survey's objectives in rat control. Extermin. Log 5 (11): 15. Nov. 1937.
- Greene, E. R. Southern robin nesting at Waycross, Ware County, Georgia. Oriole 2 (3): 27. Sept. 1937.
- Hicks, L. E. The controlled hunting areas and the pheasant management system in northwestern Ohio. Second North Amer. Wildlife Conf. Trans., pp. 589-598. 1937.
- Jackson, H. H. T. Some accomplishments of the cooperative research units-- a summary to January 31, 1937. Second North Amer. Wildlife Conf. Trans., pp. 108-118. 1937.
- Jones, J. C. Cryptotis parva in central New York. Jour. Mammal. 18: 514. Nov. 1937.
- Kalmbach, E. R. Crow-waterfowl relationships in the Prairie Provinces. Second North Amer. Wildlife Conf. Trans., pp. 380-392. 1937.
- and Coburn, D. R. Disease factors in reported cases of starvation in waterfowl. Second North Amer. Wildlife Conf. Trans., pp. 404-410. 1937.
- Lincoln, F. C. The waterfowl situation. Second North Amer. Wildlife Conf. Trans. pp. 168-179. 1937.
- McAtee, W. L. The American merganser in British Columbia and its relation to the fish population, by J. A. Munro and W. A. Clemens. Biol. Board Canada Bull. 55, 50 pp. Sept. 1937. (Review.) Auk 55: 152-153. Jan. 1938.
- The naturalization of animals, with special reference to South Africa, by R. Bigalke. So. African Jour. Sci. 33: 46-63. March 1937. (Review.). Auk 55: 145. Jan. 1938.
- Observations on wild cotton in birds' nests in Antigua, by Harold E. Box. Trop. Agr. 14: 254-255. Sept. 1937. (Review.) Auk. 55: 146. Jan. 1938.
- "Anting" by birds. Auk 55: 98-105. Jan. 1938.
- Marshall, W. H. Muskrat sex ratios at the Bear River Migratory Bird Refuge. Jour. Mammal. 18: 518-519, Nov. 1937.
- A herring gull record in Utah. Condor 39: 258. Nov. 1937.
- Saylor, L. W. Synopsis of the Chilean genus Phytholaema. U. S. Natl. Mus. Proc. 85 (3028): 5-11, illus. Dec. 3, 1937.
- The beetles of the subfamily Chasmatopterinae in the New World, (Coleoptera: Scarabaeidae). Jour. Wash. Acad. Sci. 27: 531-535, illus. Dec. 15, 1937.
- Sheldon, H. P. Guns and game. Country Life and Sportsman 73 (2): 34, 136, 138. Dec. 1937.
- Shillinger, J. E. Disease relationship of domestic stock and wildlife. Second North Amer. Wildlife Conf. Trans., pp. 298-302. 1937.
- and Cottam, C. The importance of lead poisoning in waterfowl. Second North Amer. Wildlife Conf. Trans., pp. 398-403. 1937.

- Susott, A. W. Here come the elk! Natl. Nature News 1 (34): 1, 3, illus. Nov. 15, 1937.
- Taylor, W. P. Wildlife management demonstration on a countywide basis. Second North Amer. Wildlife Conf. Trans., pp. 47-55. 1937.
- Templeton, G. S. Self-feeding fryer rabbits. Small Stock Mag. 21 (12): 5. Dec. 1937.
- Williams, C. S., and Marshall, W. H. Survival of Canada goose goslings on the Bear River Refuge, Utah, 1937. Jour. Wildlife Mgt. 2: 17-19. Jan. 1938.
- Zahniser, H. The marshes of Malheur. Bird-Lore 39: 446. Nov./Dec. 1937,
 ----- Indoors and out. Nature Mag. 30: 327, 330. Dec. 1937.
 ----- Indoors and out. Nature Mag. 31: 71. Feb. 1938.

Press and Radio Information and Addresses, copies of which (chiefly in mimeograph) may be obtained from the Division of Public Relations, have been issued as follows:

- President increases area of bird refuge in Florida. Press statement 890-38. Released Nov. 29.
- Acquisition of 16,067 acres of land for U. S. wildlife refuges approved. Press statement 950-38, Released Dec. 10.
- Begin research on minks to help fur farmers get better breeding results. Press statement 997-38. Released Dec. 20.
- Leaflet tells how to control coyotes during denning season. Press statement 993-38. Released Dec. 20.
- Systematic feeding tides wildlife over winter, says U. S. Bulletin. Press statement 1024-38. Released Dec. 27.
- Farm lands important in conservation of wildlife. (Annual report of Biological Survey stresses wildlife's need for land and protection.) Press statement 1049-38. Released Dec. 31.
- Federal agents destroy nearly 500 duck traps in Maryland, Virginia. Press statement 1092-38. Released Jan. 8.
- Cage trap captures crows. Press statement 1143-38. Released Jan. 20.
- Well-fed bobwhite whistles at winter. Press statement 1170-38. Released Jan. 24.
- Wildlife Bureau is reorganized. Press statement 1178-38. Released Jan. 25.
- Pennsylvania joins U.S.D.A. in cooperative wildlife research. Press statement 1174-38. Released Jan. 26.
- Gabrielson warns against return to old ways of waterfowl hunting. Press statement 1271-38. Released Feb. 16.
- Sportsmen spend \$11,000,000 in year for hunting licenses and duck stamps. Press statement 1293-38. Released Feb. 27.
- Wild turkey flocks. Farm Flashes Released Dec. 17.
- Wildlife troubles. Farm Flashes Released Dec. 31.
- Wildlife gully job. Farm Flashes Released Jan. 20.
- Helps for wildlife. Farm Flashes Released Feb. 26.
- Refuge is goose nursery. Clip Sheet No. 1017. Released Dec. 29.
- Florida swamp deer harbor cattle ticks. Clip Sheet. No. 1022. Released Jan. 30.
- Crop loans benefit birds. Clip Sheet No. 1027. Released Feb. 2.

Profit from wildlife. Clip Sheet No. 1026. Released Feb. 27.
Looking back on work for the future. Radio talk by Dr. Ira N. Gabrielson, Chief. National Farm and Home Hour, Dec. 31.

WILDLIFE RESEARCH

Speaks at Penn State on Wildlife.--Dr. Bell gave two talks on wildlife conservation on January 26 at Pennsylvania State College and conferred with college officials on the newly established cooperative research unit there, announcement of which was made the same day. The leader will be Dr. Logan J. Bennett, formerly of the Iowa research unit. Investigations for improving methods of managing wildlife on forests and farms and other biological studies will be undertaken. Pennsylvania is the eleventh State to enter into a cooperative agreement with the Bureau for investigating ways and means of fitting wildlife resources into land-use programs.

Wildlife Surveys

Gives Radio Talk.--How cooperative research helps to solve wildlife management problems was explained in a radio talk by Leo K. Couch, broadcast by Station WOL, Washington, D. C., on January 2, during the American Wildlife Institute program. Wildlife resources, he said, have a close relationship with land-use problems, and it is for this reason that the cooperative research units have been established at land grant colleges. Mr. Couch also outlined the research projects that are under way and the results accomplished thus far.

Chairman at Wildlife Session.--Mr. Couch was chairman of the technical session on special aspects of wildlife management, at the North American Wildlife Conference, Baltimore, Md., February 15. A paper prepared by E. E. Horn on "Food and Cover Plant Nurseries and Planting Out Methods for Wildlife in the Great Plains Area" was among those presented at this session.

Papers prepared by members of the cooperative research units and given at the mammal management session the same day were as follows: "Home and Seasonal Range of the Eastern Cottontail in Connecticut," by Paul D. Dalke and Palmer R. Sime; "Squirrel Management Suggestions for Eastern Texas," by Phill Goodrum; "A Summary of Ohio Gray Squirrel Investigations," by Floyd B. Chapman; "Population Studies of the Fox Squirrel in Ohio," by Luther L. Baumgarther; "Identifying Some Northeastern Animal Tooth Marks on Forest Vegetation," by John Pearce. A paper on "Control of Rodents Through Cultural Practice," prepared by D. A. Spencer, of the Division of Predator and Rodent Control, was also given at this session. At another session on mammal management held the previous day papers on "Some Wildlife-Forest Relationships," "Life History and Management of Antelope in Oregon," and "The Status of Game Animals in Ohio," were given by E. E. Horn, Arthur S. Einarsen, and Dr. Lawrence E. Hicks, respectively.

A paper by Dr. Logan J. Bennett, then of the Iowa Research Unit, and George O. Hendrickson, Iowa State College, on "Censusing the Ringneck Pheasant in Iowa," was given on February 16, at the session on upland game bird management. E. E. Horn's paper on "Factors in Nesting Losses of the California Valley Quail," was also given at this session. Papers given by the Bureau members at another upland game-bird management session held later in the day were as follows: "New Developments in Wild Turkey Management," by C. O. Handley; "Life History and Management of the Sage Grouse in Utah," D. I. Rasmussen and Lynn A. Griner; and "Observations on the Breeding Season of the Mourning Dove in the South," by Dr. Allen M. Pearson and Walter Rosene, Jr.

Inspects Field Projects.--During January, Mr. Couch was in the South and Southwest inspecting field projects. With Dr. Allen M. Pearson, of the Alabama Research Unit, he checked the unit's work and also the wildlife-forest relationship studies being completed in Mississippi by T. D. Burleigh. In Texas, with Dr. Walter P. Taylor, of the Texas Research Unit, he inspected the cooperative projects under way in Colorado, Brazos, and Walker Counties. From there he went to the Wichita Mountains Wildlife Refuge, Okla., where he joined several Bureau members in a conference on wildlife research. On his return to Washington, he stopped at Columbia, Mo., for a conference with officials of the State University and Dr. Paul D. Dalke, leader of the Missouri Research Unit.

Plan Work Program at Missouri Unit.--During November the administrative committee of the Missouri Research Unit was engaged in organization, budget, and program work. The committee consists of Dr. Rudolph Bennett, representing the University; I. T. Bode, the new director of the Conservation Commission; and Dr. Paul D. Dalke, the leader. Arrangements were made for a detailed ecological study by W. O. Nagel, research associate, of the chukar partridge in Missouri, including such factors as mortality, movements, food, and nesting habits. The committee also has outlined a program for studying trial liberation of these birds on 11 areas. Fifty birds were released on each of these areas last fall, and the same number will be released there this spring.

Dr. Rudolph Bennett, representing the University of Missouri, will make a wildlife-resource survey of the State, and Dr. Paul D. Dalke, project leader, will look after the wild turkey studies formerly conducted by Harold L. Blakey in cooperation with the Forest Service. Dr. Dalke will also supervise the white-tailed deer study in the Ozark region and the field projects of graduate students. On November 29 and 30, Dr. Bennett and Dr. Dalke inspected a beaver colony in the Meramec River near Salem, where the animals were reported to be doing damage to cornfields.

Attends Midwest Wildlife Conference.--Mr. Couch and Shaler E. Aldous, associate biologist stationed at the Lake States Forest Experiment Station, St. Paul, Minn., represented the Bureau at the Midwest Wildlife Research Conference held at Madison, Wis., November 11 to 13. Mr. Couch

later visited the Upper Mississippi Refuge and conferred with Superintendent Ray C. Steele, after which he went to Ames, Iowa., for a conference with Dr. Logan J. Bennett and inspection of research work under way there.

On November 18, 19, and 20, Mr. Couch assisted in setting up the new research unit at the University of Missouri.

On November 22 and 23, he conferred with cooperating officials at Ohio State University and the Ohio State Conservation Commission concerning the work of the Ohio Unit. He and Dr. Lawrence E. Hicks, leader of the Unit, also visited the Woods County farmer-controlled hunting area to review the research work of Mr. Leedy, a graduate student.

Member of Deer Problem Committee.--At the Midwest Game Conference at Madison, Wisc., Mr. Aldous was elected a member of a committee formed in the interest of better cooperation among fieldmen engaged in deer research and management. The report of the committee, read by Mr. Aldous, recommended that the chairman of the Central States Wildlife Conference request all Federal and State agencies engaged in wildlife work in the region to supply a list of all workers engaged in active deer work and a description of their projects. A list of these workers is to be mimeographed and distributed among the workers and their supervisory offices. It was also recommended that a section of the next conference be devoted to a discussion of deer problems.

Find Open Season for Deer Necessary.--Mr. Aldous reports that Minnesota and Wisconsin, which normally have open deer seasons every two years on the even year, both declared a short open season this past fall because the deer populations were becoming too large for the available food supply. As a result of this increase the forest growth was beginning to suffer and the mortality of deer was increasing.

In Minnesota, the large refuge in the Superior National Forest was opened to hunting for 5 miles on each side of all the maintained roads within the refuge. As this was the first time hunting was permitted on the refuge considerable controversy arose. Census figures from the northwestern part of this refuge showed a decrease in deer this year from last year, which might indicate that the number of animals was in excess of the carrying capacity.

Reports Tree Transplanting Results.--During the spring of 1935, Robley Hunt, a former game technician of the Forest Service at Tofte, Minn., and now with the Bureau, suggested transplanting good-sized evergreen trees from swamps to burned-over areas lacking cover for game. With the aid of C. C. C. labor, 302 balsam fir trees were transplanted into three clumps, and 147 black spruce trees into two clumps. The trees were 6 to 8 feet high and were transplanted at an average cost of 63 cents each. At the end of two seasons Mr. Aldous reports that a check of the plantings shows a 93 percent survival on the balsam fir area and 99 percent on the spruce area. The areas were originally intended for grouse cover, but since grouse are now at a low point in their cycle no data have been ob-

tained on their use of the plantings. Deer, however, used the areas, especially the balsam clumps, which are near a deeryard. The animals virtually ruined a group of mountain-ash plants that had been put around the clumps, but the spruce in the clumps, was not eaten. These findings and results of studies made during the winter of 1936-37 of deer movements and habits suggested the planting of a series of clumps between isolated parts of a deeryard as a means of providing cover between the areas and encouraging the deer to browse species in open areas.

During the past spring a crew of C.C.C. boys, detailed to the Lake States Forest Experiment Station, transplanted 695 trees into clumps as follows: White cedar, 88; balsam fir 213; white spruce, 17; and black spruce, 377. The average cost per tree on this planting was reduced to 36 cents. The height of the trees ranged from 2 to 15 feet, averaging about 6 feet. A check made during December of the cover planting shows the following survival figures: For all clumps, 52 percent; balsam fir, 63 percent; white cedar, 25 percent; white spruce, 53 percent; and black spruce, 52 percent.

Study Beaver Food Habits.---Mr. Aldous reports that the stumps of all trees and bushes cut by beavers this past season at five dams in Minnesota were measured and marked in a study of beaver habits and food utilization. The following table shows the species cut and the extent of utilization:

Species	Number cut	Used		Wasted		Tops only used	
		Number	Pct.	Number	Pct.	Number	Pct.
Aspen	362	115	32	99	27	148	41
Willow	179	173	97	6	3	-	-
Alder	509	505	99	4	1	-	-
White birch .	15	4	27	4	27	7	46
Hazel brush .	13	13	100	-	-	-	-
Red osier ...	8	8	100	-	-	-	-

A Good Word for the Crow.---Mr. Aldous reports that at the Department of Entomology and Economic Zoology, University of Minnesota, during the summer of 1936, Dr. A. C. Hodson, who has been studying the forest tent caterpillar, noticed the tracks of a forest road, in northern Minnesota, filled for about a quarter of a mile with thousands of empty cocoons of this insect. He investigated and found that crows would go into the adjacent brush and ground vegetation, pull off a cocoon from its attachment in the litter, take it to the road, tear it apart, and eat the pupa. How extensive this predation was Dr. Hodson did not know, but

crows were relatively abundant and undoubtedly found this food as choice as others there and much more easily obtained. Mr. Aldous has seen crows in numbers between 50 and 500 in the Superior National Forest and found many small flocks in the section infested by tent caterpillars, but his observations were too early in the season to check the pupal predation reported by Dr. Hodson.

Reports on Deer Study.--Dr. Allen M. Pearson, leader of the Alabama Research Unit, reports that the field work on the Allison Preserve during the month dealt mainly with the examination of deer killed by hunters during the season ended December 31. Two veterinary students who assisted in this work examined the animals for disease and parasites and found them generally in good flesh. Samples of tissue from the esophagus, muscle, trachea, blood, and liver were taken for laboratory examination and either part or complete data on the physical condition of 102 deer were obtained. This number is probably a third of half of the animals killed on the area. Weights obtained for 84 deer averaged approximately 150 pounds, compared with 138.5 and 132.5 pounds, respectively for the 1935 and 1936 seasons. Fall food especially was apparently abundant this year.

During November most of the deer on the preserve remained in the flatwood areas and did not move about as much as they did in October. Fawns were beginning to lose their spots about October 15 and by November 15 none were observed. Signs of antler rubbing on trees were seen and pawing marks were frequently found in open and semiopen areas. The plants browsed during November included muscadine, pokeweed, smilax, blue beech, oxalis, red gum blackberry, grape, "cowitch," hickory, elm, hackberry, nightshade, and "rabbit tobacco." Chestnut oak acorns were found bitten open during October and the soft parts apparently eaten. Acorns in this condition were also found in some of the deer stomachs examined after the opening of the hunting season.

Build Beaver Shipping Crates.--During October, C. O. Handley, leader of the Virginia Research Unit, worked out details of a beaver shipping crate based on a diagram furnished by the New York Conservation Department, which W. W. Bailey, a graduate student at Virginia Polytechnic Institute used in building two crates. Later in the month a simpler and lighter crate similar to that used by the New Hampshire Game Department was designed for use in future construction.

During the month Mr. Bailey also received four pairs of beavers for the Virginia Commission of Game and Inland Fisheries. Two pairs, one from New York and the other from New Hampshire, were liberated in a lake in the Swift Creek Recreational Park in Chesterfield County; another pair from New York was released by Mr. Handley in one of the large lakes on the Virginia Polytechnic Institute campus; and one pair received from Michigan was delivered to Farm Security Administration officials at Farmville and released at Horsepen Dam in Cumberland County.

Beaver Management Studies:---Mr. Handley reports that three young beavers placed in a pen on Baileys Creek on November 29 show signs of being permanently established. They have built a dam across the stream and a burrow and are using both the burrow and the plank house built for them. The animals seem to prefer aspen and sweetgum to all other foods, although they have been observed feeding on poplars, sumac, honeysuckle, apple, elder, and blackberry roots.

An investigation of the beaver establishment at Tummiehinton Lake, Dinwiddie County, made early in the fall by C. P. Patton showed that the beavers there were not active near their houses but were very active about 3 miles upstream. On December 11, W. W. Bailey investigated this colony and found all recent cuttings to have been made within a few hundred yards of the houses. No activity of any kind was noted in the section where they had been so active at the time of C. P. Patton's observations. Mr. Bailey also found that these beavers were cutting sweetgum, honeysuckle, poplar, loblolly pine, hickory, and white walnut.

Studies Beaver's Food Habits.---Donal F. O'Brien, graduate assistant at the Maine Research Unit, who is studying the food habits of several beavers in captivity, reports that the animals' consumption of food has dropped off greatly with the advent of cold weather. Aspen appears to be a favorite food, and other foods, such as alder, willow, maple, cedar, and birch, remained untouched when a sufficient quantity of aspen was available in the pen. Alder apparently is the second choice food and red maple the third. The animals appear to be contented in their small enclosure in spite of being molested at times by stray dogs barking outside of the pen.

Checks Woodcock Kill and Weights.---Karl Jacobson, graduate student at the Maine Research Unit, checked the bags of woodcock hunters in Calais and St. Stephen areas and obtained weights and measurements of birds shot last October. He also saved the stomachs and intestines of a number of birds for use in food and parasite studies.

Approximately 160 woodcock were weighed and measured, and the results showed that male birds seldom weigh more than 200 grams and the females seldom less than 170 grams. Birds weighing between 170 and 200 were about equally divided as to sex. The lightest male weighed slightly under 130 and the heaviest 230; the lightest female, 130 and the heaviest 250.

Two of the woodcock chicks banded May 21 and shot on October 27 and 28 were among the heaviest birds taken on the two areas this past fall. They were killed well after the resident birds were believed to have moved south, which indicates that the late birds are not always the so-called "flight birds." As far as could be determined there were no external plumage differences between the banded young birds and others killed about the same time.

Help Develop Pheasant Census Method.---During the fall shooting season of 1935 about 50 percent of the pheasants in Iowa were taken and the severe winter weather that followed accounted for a further loss of 25 percent. The following summer the Iowa Conservation Commission was anxious to learn if Iowa would have enough pheasants for future open seasons, so, Dr. Logan J. Bennett and Dr. George O. Hendrickson spent part of October working out more fully a pheasant census method for the commission. After checking observation methods previously used they developed a plan whereby the conservation officers drove in automobiles at least 20 miles on gravel roads in three parts of a county on three successive days between 6 a.m. and 8 p.m. The number of birds recorded and divided by the number of miles traveled gave the average number seen per mile in the county. In 1937 the same method was used and as it showed a decrease in pheasants from the previous year the commission was able to close the season with little criticism. Prior to 1936 the mass driving method to census pheasants was used at an annual cost of about \$4,000. The results of this method were not satisfactory and as the present method is performed by the conservation officers during patrol hours there is no extra cost.

Makes Maps of Cover on Big-Game Pastures.---During October, Charles H. Rouse worked on a vegetative cover type map of big-game pastures on the Wichita Refuge. A tentative compilation indicates that the entire pastureage is 7,719 acres, of which 4,585 are open grassland and 3,315 woodland-- largely scrubby and blackjack oak. Cover types on a large part of the pasture area have been described and their use noted by Mr. Rouse, who plans to compile similar information on the remainder of the area.

Many inaccuracies found by Mr. Rouse in the field maps were corrected. By locating the old General Land Office survey corners, many of which were established in 1874, it was possible to find 10 section corners and 11 quarter corners within the pasture area. Using these corners and aerial photographs, Mr. Rouse was able to determine the limits of cover types more accurately.

Inspect Deer Herd.---Late in November, Dr. Daniel I. Rasmussen, leader of the Utah Research Unit; Orange Olsen, in charge of fish and game management for Region 4 of the Forest Service; and Randall Turpin, of the State Fish and Game Department, inspected the condition of deer on the Dixie Forest in southern Utah. An agreement was reached to recommend the removal of a limited number of does to afford better range protection and game management. The recommendation has the support of both sportsmen and livestock men in this area.

Observe Deer in Cache Forest.---Dr. Rasmussen reports that during December, Mr. Evans combined class work and field observations on deer on the Cache National Forest. Several field trips were made to deter-

mine deer migration routes. The warm open winter, however, has allowed the deer to remain scattered over a large part of the normal fall range, and the usual concentration on a limited winter range has not taken place. The difference in the behavior of deer this year as compared with other years will very likely prove helpful in obtaining a true picture of the factors influencing their movements and migrations.

Check Mule Deer Kill.--A total of 353 mule deer were weighed and measured at the checking stations operated by the Utah Research Unit in Logan, Green, and Providence canyons of the Cache National Forest during the open buck season from October 20 to 30. Three additional checking stations were operated in adjoining areas by forest officials, who are cooperating with the research unit in deer management studies. During the season field conditions were also studied closely.

Of particular interest were the returns obtained on 7 buck deer that had been tagged near Logan the previous winter and killed during the hunt. Two of the animals weighed more than 200 pounds hog-dressed. News of the killing of tagged deer spread rapidly through the forest and created much interest among the hunters. Some of the animals that had been tagged the previous winter at the age of eight months had forked horns and a nearly complete set of lower incisor teeth.

Operation of the checking stations was made possible by the cooperation of the local fish and game association, the Forest Service, the forestry school of the Utah Agricultural College, and advanced wildlife management students of the college, who had been assigned to the project for training in wildlife management. Thomas Evans, a graduate student, spent full time during the 10 days making field observations and assisting in the collection of data on deer measurements.

Check Game on Demonstration Tract.--A game census made by the Oregon Research Unit on its demonstration tract just before the recent shooting season showed an increase in game again, although the increase was hardly as noticeable as that of the first season. Chinese pheasants showed the greatest increase. Shooting pressure brought scarcely any influx of these birds to the demonstration area. Before the shooting season opened it was determined that the heaviest population of pheasants was concentrated on the tract and that there were relatively few birds in adjoining areas. When the season opened the shooting pressure became immediately noticeable and the birds that were available were soon taken. The scarcity of birds, however, soon reduced this pressure and as a result bobwhite and valley quail near the tract were not molested sufficiently to cause them to migrate to the tract as they did last year. There were few bobwhite quail on the tract as they are transient and not as fixed as the valley quail. The ruffed grouse, which seem to prefer swamp sections, are still relatively abundant on the demonstration tract. This seems to indicate that they respond very well to the protective type of management on the tract.

Several practices have been found to encourage the establishment of valley quail. As the birds are gregarious, it was found advisable to provide them with roosting retreats.

Reports on Chinese Pheasant Banding.---Arthur S. Einarsen, leader of the Oregon Research Unit, reports that returns from banding experiments with more than 30,000 Chinese pheasants liberated in Oregon the past November indicate that the interest in this program is general and that the recoveries of bands are recorded immediately. One of the most interesting returns was that of a banded hen pheasant shot illegally near Albany, Oreg. This band apparently helped obtain favorable court action as it helped prove that the hunter was after birds that had been liberated.

A plan is under way for trapping and banding valley quail that are to be liberated in denuded areas in order to eliminate some of the heavy concentrations that more or less handicap themselves by overpopulation in critical areas. Traps are being made, and the plans are to band and liberate a number of these birds in February and March.

Winter Census of Antelope.---Mr. Einarsen reports that winter census of antelope in Oregon and nearby areas in Nevada was at its height during January. On the Charles Sheldon Refuge, Mr. Sans and Mr. St. John cooperated with Mr. Einarsen as did Mr. Branson and others of the Hart Mountain Refuge. The winter had been open and food for the animals abundant. Rainfall was heavy and prospects of good forage conditions this year appear bright.

Determine Food Eaten by Coyotes.---Charles H. Rouse, associate biologist at the Wichita Mountains Wildlife Refuge, Okla., reports that an examination of the stomach contents of 5 coyotes trapped on the western part of the refuge by Andy Campbell last spring showed that the animal's food at that time consisted almost entirely of cottontail rabbits. The examination of the stomach contents was made by the Denver Food Habits Laboratory in November.

Makes Survey of Pheasant Take.---Dr. L. E. Hicks, leader of the Ohio Research Unit, reports that a survey by D. I. Leedy of the pheasant take by farmer-hunters in Wood County during the 1937 season showed an average take of 4.8 birds by each of the 357 farmers that were interviewed. The take per hunter ranged from 2.7 birds in Troy Township to 6.7 birds in Liberty Township and appears to be closely associated with the results obtained in a nesting survey and corn available in townships. A survey of the available corn and soybeans made around the Liberty Township and Auwerter Refuges indicates that there was twice enough food within one mile of these refuges to feed 1,500 pheasants from December 1 to April 1. Mr. Leedy also assisted in trapping and distributing the pheasants. More than 1,500 have been trapped.

Allen Duvall Packed the Specimens.--Excerpt from letter of December 13, received from Prof. Myron H. Swenk, College of Agriculture, University of Nebraska, Lincoln, Neb., is as follows: "The specimens of red-winged blackbirds have been received and unpacked. I thought I packed the birds exceedingly well when I sent them to you, but I take off my hat to the person who packed them for the return journey, whoever it was. They were beautifully packed, and I cannot see how anything short of a major railroad smashup could have injured them in transit."

Count Quail in Eastern Texas.--Dr. Walter P. Taylor, leader of the Texas Research Unit, reports that a quail count made on Nacogdoches project of the Soil Conservation Service in Texas, by Phil D. Goodrum, of the Texas Game, Fish, and Oyster Commission, and Travis MacClendon, of the Soil Conservation Service, produced interesting information on the number of these birds in the eastern part of the State. A total of 1,604 quail were counted on 104 farms having a total acreage of 16,693. Each farm averaged 160.5 acres and 15.4 quail, making 1 quail for each 10.42 acres. Mr. Goodrum believes that the quail conditions in the area censused are typical of most of the northern part of eastern Texas.

Attends Meetings.--On December 2, Dr. Taylor attended a meeting of Brazos County farmers and extension specialists for considering the application of the Extension Service wildlife farm program in the county. It was agreed that wildlife has a place in the farm program.

On December 4, Dr. Taylor attended a meeting of the executive committee of the Texas Academy of Science, held at Baylor University, at Waco. He is vice-president of the academy's section on conservation.

Lists Important Foods of Quail.--V. W. Lehmann, field biologist of the Texas Research Unit, lists the 12 most important winter foods of quail based on a study of the contents of 1,000 stomachs that he collected during December and January, 1934-35, in order of importance as follows: Doveweed, panic grass, Johnson grass, oak, paspalum, ragweed, mesquite, sunflower, snow-on-the-mountain, partridge pea, gum elastic, and skunk daisy.

3,000,000 Acres Signed in Cooperative Project.--R. E. Callender, extension specialist in wildlife conservation, stationed at the Texas A. & M. College, reports that 3,000,000 acres of Texas farm land have been signed up for the Extension Service game preserve demonstrations. These cooperative projects will be conducted by the Bureau and the Texas Game, Fish, and Oyster Commission.

Arrange W.P.A. Project.--E. E. Horn, stationed at the California Forest and Range Experiment Station, at Berkeley, reports that arrange-

ments have been made with Dr. A. W. Sampson, associate professor of forestry, of the University of California, for a W.P.A. project for compiling an annotated bibliography of wildlife as related to all phases of forestry and an annotated bibliography of the history of wildlife in California. Three sets of abstract cards of these works will be made, one for the library of the university forestry school, one for the Berkeley office of the Forest and Range Experiment Station, and one for the Biological Survey. Fifteen workers are to be assigned to the project.

Study Panama Mammals:--Dr. Robert K. Enders, of the Section of Fur Resources, David W. Bishop, of the University of Pennsylvania, and Oliver P. Pearson, of the Academy of Natural Sciences, Philadelphia, Pa., used the mammal laboratories on December 23 in making comparative studies of their recently collected Panama mammal specimens.

Visit Mammal Laboratory:--On December 10, Charles N. Elliott, director of the Division of State Parks, Atlanta, Ga., conferred with A. H. Howell, who is studying the birds of Georgia, and offered to assist him in locating the breeding grounds of black ducks in the State.

F. Carrington Weems conferred with E. A. Goldman at the laboratory on December 27 on desert bighorn problems and other mammalogical and conservation matters.

Food Habits Research

Inspects Drainage Areas:--Dr. Clarence Cottam, in charge of the Section of Food Habits, Fred R. Rauch, principal engineer of the Highway and Conservation Division, Works Progress Administration, and Dr. F. C. Bishopp, of the Bureau of Entomology and Plant Quarantine, inspected drainage areas in Connecticut late in December to obtain a better correlation between mosquito-control and wildlife programs. Dr. Cottam also inspected drainage projects in Rhode Island, and at the Peabody Museum at New Haven, Conn., obtained records of Utah birds from Dr. L. B. Bishop's egg collection.

Attends Science Meeting:--Dr. Cottam represented the Bureau at the meeting of the American Association for the Advancement of Science and associated societies, at Indianapolis, Ind., December 26 to January 1, and participated in several informal discussions on wildlife subjects.

Discusses Mosquito Control with Sportsmen:--In response to a request from the New Jersey Federated Sportsmen's Association, Dr. Cottam went to Bergen County, N. J., on January 12, and inspected plans for a proposed mosquito-control project. He discussed some of the effects of mosquito control on wildlife with a number of the sportsmen with a view to preventing ill-advised drainage, especially that detrimental to wildlife.

Participates in Mosquito-control Discussion.--Dr. Cottam participated on February 15 in the general discussion of mosquito control on the Atlantic coast at the North American Wildlife Conference at Baltimore, Md. He also was chairman of the technical session on food habits the following day. Papers by Bureau members given at this session were as follows: "A Preliminary Study of the Food Habits of Elk in Virginia," by W. P. Baldwin and C. P. Patton; "Food Habits of Minnesota Deer Determined Through Stomach Analyses," Shaler E. Aldous and Clarence F. Smith; "Preliminary Report on Some of the Important Foods of the Mourning Dove in the Southeastern United States," Miss Phoebe Knappen; and "Identification of Plant Items in Food Studies," A. C. Martin.

Report Increase in Waterfowl.--Traveling in Navy airplanes, Dr. Cottam, A. L. Nelson, and R. C. McClanahan made an inventory of waterfowl from January 26 to 28, from Beaufort, N. C., to the Rappahannock River in Virginia. All three reported an increase this year over last in the number of birds on this area. In flying over the Pea Island Refuge, Dr. Cottam estimates that he saw 7,000 snow geese. A concentration of about 11,000 redheads was observed in Kitty Hawk.

Observe Waterfowl along Eastern Shore.--Franklin H. May and Clarence F. Smith also made waterfowl observations from naval airplanes on January 24, both taking off from Annapolis, Md. Mr. May saw 1,400 swans, most of which were at the mouth of the Choptank river between Kent and Taylor Islands on the Eastern Shore. Mr. Smith's trip took him over the Potomac River and tributaries. He reported seeing a flock of 200 geese on the Potomac near Indian Head and considerable oil on the river below Alexandria, Va.

Make Duck Survey.--Leaving Biloxi, Miss., in a Coast Guard airplane on January 5, John J. Lynch and Robert C. McClanahan made an inventory of the numbers of ducks and geese on southern Louisiana marshes. On January 8, Mr. McClanahan and Eugene Boring made an inventory by airplane of the Mobile River delta in Alabama. Waterfowl appeared to be more abundant in the Louisiana marshes this year than last, especially canvasbacks. No redheads, however, were seen.

Collects Data on Band-Tailed Pigeons.--As more complete information on the band-tailed pigeon is needed for determining management practices and hunting regulations, Johnson A. Neff, stationed at Sacramento, Calif., has devoted considerable time in recent months in studying the habits of this bird. From September 6 to October 7, his studies took him to Washington, Oregon, and northern California, and during December to the Santa Lucia Mountains and other sections of California. Mr. Neff learned that upon returning from the South these pigeons con-

gregate in agricultural sections, particularly on newly planted oat and pea fields, where they cause heavy damage. During the nesting season they scatter, but sometimes later in summer and in fall they begin to congregate again in the farming areas. Mr. Neff found that the birds' food preference changed from wild berries to acorns along much of the West coast during a period of heavy rainfall, and that this was accompanied by a change in habitat. When an exceptional food was found it was noted that the birds often fed upon it entirely. During December, Mr. Neff observed band-tailed pigeons in the field and obtained stomachs in representative areas during the hunting season. The birds appear to be rather erratic in movement as in some of the areas where they are normally abundant there was poor hunting, and in other areas they were more abundant than usual.

Inspects Horned Lark Damage.--On December 14, Mr. Neff inspected an area near Fresno, Calif., where horned larks caused the complete loss of sugar beets in a 160-acre field within 3 days. Late in December, he and assistant entomologist C. C. Wilson spent four days studying the relation of birds to grasshoppers.

Test Waterfowl Food-Plant Seeds.--Seeds of approximately 20 plants that furnish food or cover for waterfowl in the Bear River Refuge area in Utah have been collected and sorted into small lots for germination and storage experiments by C. S. Williams, assistant biologist at the refuge, and his assistant, Mr. Oborn, a student at the Utah Agricultural College. The seeds have been placed in 100 seed lots in the field in special containers for monthly germination tests. Various methods of breaking the rest periods of the seeds are being tried in the laboratory. Alternate freezing and thawing of sago pondweed seeds have shown good results thus far in hastening germination. Ruppia germinated readily at room temperatures soon after the seeds were collected.

Mr. Williams reports that observations have brought to light the fondness of waterfowl for glasswort. When many of the refuge's low flats where the plant was in seed were flooded, large numbers of all kinds of waterfowl, including Canada geese, visited these flooded areas to feed on this plant. On one occasion Mr. Williams observed a flock of 18 geese feeding intermittently on it for two hours. Further studies of the plant will be made this year.

Explains Waterfowl Studies.--On December 2, E. R. Kalmbach, in charge of the Denver Food Habits Laboratory, talked before the Denver chapter of the Izaak Walton League on waterfowl studies that have been made in North Dakota and Canada. On December 16, at the Colorado Bird Club he reviewed his quarter of a century's work with the Survey. Mr. Kalmbach also talked on waterfowl nesting studies on November 2, at the second annual short course in conservation that was held at

the Oklahoma A. & M. College at Stillwater, after which he conferred with Ralph H. Imler, of the Denver Laboratory, who is studying the extent of crow damage to grain crops in Oklahoma.

Edits Motion Picture Film.---Mr. Kalmbach has edited 500 feet of motion picture film taken in Utah that is to be included in the motion picture on avian botulism. The picture is being revised and shortened to show the latest developments in controlling this disease.

Inspects Waterfowl Food Conditions.---Leaving the Delta Migratory Waterfowl Refuge, La., on November 26, Neil Hotchkiss and John J. Lynch spent three weeks inspecting waterfowl food conditions at Catahoula, St. Joseph, and Caddo Lakes and the Sabine and Lacassine Refuges, La., White River Refuge and Grassy Lake, Ark., and the Aransas Refuge and other waterfowl areas in Cameron and Brazoria Counties, Tex. Waterfowl were abundant and food adequate in all these areas except Cameron County, Tex. This county was hard hit by drought last summer, and many of the ponds and lakes became dry. Some of them have again been partly filled, but the waterfowl food plants have failed to recover. Food conditions for wild ducks and geese were good in the nearby Laguna Madre area, but reports indicate that more than the usual number of birds had already left for Mexico.

A small quantity of Texas wildrice seed to be used in experimental plantings was collected at San Marcos, Tex. Although this plant is known to grow only in this area, it is possible that it may be grown in other southern localities if lakes with a good circulation of clear water can be created.

Before going on this trip Mr. Lynch also completed his year's observations of a perennial species of wild millet at the Delta Refuge that is successfully competing with the too-abundant alligator weed. As far as known there is no record of this plant occurring in this country. It grows principally in Mexico, the West Indies, and South America. Studies of its growth in Louisiana and its value as a waterfowl food plant will be continued this year.

Studies Relationship of Mergansers to Fishes.---C. C. Sperry, associate biologist of the Denver Laboratory, spent two weeks at the Elephant Butte Reservoir, N. Mex., studying the relationship of mergansers to the fish supply. As the birds were not overly abundant then, only a few were caught in the traps used in experimental control operations. Mr. Sperry planned to make another trip to the reservoir later, when large flocks of mergansers usually visit this body of water and frequent the deeper parts where game fish stay. As many as 15,000 birds have been reported on the reservoir in previous seasons.

Reports on Lower Souris Studies.---Mr. Kalmbach has submitted to the Washington office his completed report of his studies last summer on the Lower Souris Migratory Waterfowl Refuge, N. Dak. Some of his sug-

gestions for changed management practices are to be followed this coming season as far as water conditions and other factors permit.

Studies Crow Damage.--To obtain current and accurate information on the damage to grain crops in Oklahoma by crows, Ralph H. Imler, of the Denver Laboratory, is making field appraisals of damage over a wide area in that State. The Extension Service, which is cooperating in this study, mailed and collected a series of questionnaires addressed to farmers throughout the State. After the information in the questionnaires is analyzed it will be correlated with that being obtained by Mr. Imler. He first worked in Grady County and later in nearby and more distant counties. His work will probably be finished before all the season's crops are out of the fields.

Examines Fox Material.--C. S. Williams, who is stationed at the Bear River Refuge, Utah, spent several days at the Denver Laboratory late in December and early in January examining the blue fox material he collected on an expedition to the Aleutian Islands in the summer of 1936. He returned to his headquarters January 9.

To Band Crows.--Arrangements have been made with Thomas C. Horn, manager of the Deer Flat Refuge in Idaho, to trap and band crows in the refuge area for determining their migratory movements. Similar work in Oklahoma, which was done under the direction of E. R. Kalmbach, demonstrated that most of the crows that winter in that State bred in the Prairie Provinces of Canada.

British Visitor.--C. W. B. Winiston, of the International Wild Bird Protection Committee, British Museum, London, conferred with members of the Food Habits Section during January on waterfowl and their foods, and on the advisability of carrying out a planting program.

Personnel Notes.--Robert H. Gensch, of Milwaukee, Wis., was appointed junior biologist in this Section November 19. He obtained his Bachelor of Forestry degree last June from the University of Michigan, where he majored in wildlife management.

Albert H. Trowbridge was appointed junior biologist in this Section December 1. He holds a B. S. degree from Oklahoma A. & M. College and an M. S. degree from the University of Oklahoma. Since receiving the latter degree in 1934, he has been doing graduate work at the University of Oklahoma toward the Ph.D degree.

The appointments of G. A. Ammann and Ray Greenfield as assistant biological aides were terminated December 31 as the C.C.C. funds under which they were employed were no longer available for carrying on their work.

Miss Madelyn M. Conley, junior clerk-stenographer under temporary appointment in the Section of Fur Resources for 3 months, was given a 3-months' appointment on December 15 as stenographer in this Section.

Distribution and Migration of Birds

Investigates Waterfowl Conditions in Mexico.--Dr. George B. Saunders, Central Flyway biologist, reports that continued rains on the Tamaulipas coast in Mexico made field work and car travel extremely difficult, but that he obtained the services of a pilot and airplane for several days and with sufficient flying time expected to cover more than 300 miles of the Mexican gulf coast between Matamoros and Tampico. His later report on this area will cover information obtained at the same time the January waterfowl check-up was being made throughout the United States.

He reports that heavy flights of ducks to localities along the coast of central and northern Texas during September and October led many hunters and other observers to believe that there had been an increase in numbers, but he attributes the local abundance to a corresponding scarcity of waterfowl in Oklahoma, Kansas, Nebraska, and other interior States at that time. Although last winter a large number of redheads were concentrated on the lower part of the Laguna Madre west and northwest of Port Isabel, he reports that on November 27 there were no more than 15,000 in this locality. He hoped to learn more about the status of this species during his January reconnaissance of the Texas and Tamaulipas coastal areas.

Goldman in Western Mexico.--Luther J. Goldman, Pacific Flyway biologist, is continuing waterfowl investigations in many localities that he visited in previous years in western Mexico. Observations have been made in the Rio Yaqui, Rio Mayo, Rio Fuerte, Rio Sinaloa, Rio Rosario, and other river valleys, and on the coastal lagoons at Mazatlan, Sinaloa, and points in Nayarit. He reports Nayarit as good duck, goose, and crane country, although conditions indicate a delayed migration. On the San Zamorono river and delta he observed a heavier concentration of Mexican black ducks (Anas diazi) than he had seen previously. He reports that the white-fronted geese are showing up well in this locality, and he hopes to find many places used by these birds in Mexico. Near Mazatlan he observed more ruddy ducks than all other species combined, but no mallards and very few redheads and canvasbacks. On the southern tableland he plans to observe pintails, a species that represents the backbone of the western duck supply, and believes that those observed in western Mexico may be largely Alaskan birds that travel by the sea route. In one area in Hidalgo, he found large concentrations of ducks, consisting of 100,000 pintails, scaups, and wigeons.

Peters on South Atlantic Coast.--Open winter-season conditions are reflected in a report on waterfowl furnished on December 17, by Harold S. Peters, Atlantic Flyway biologist, at which time waterfowl had not gone as far south as Florida and Georgia. On a 500-mile aerial survey in a Coast Guard airplane along the coast from Georgetown, S. C., to Brunswick, Ga., he observed 40,000 ducks, most of which were on the Cape Romain and Savannah River Refuges. Later he reported on waterfowl on refuges in North

Carolina and in the Currituck Sound and Back Bay areas and stated that more ducks, Canada geese, and swans were in the North Carolina sections than in several years past.

Gillham Checks Mississippi Delta Area.--C. E. Gillham, Central Flyway biologist, who recently investigated waterfowl conditions in the vicinity of Cairo, Ill., was scheduled to return later to the Gulf coast to observe waterfowl conditions near New Orleans and on the Mississippi River Delta. Just before Christmas, while on the Gulf coast, he conferred with E. A. McIlhenny, who operates a successful waterfowl banding station at Avery Island, La., and planned to return there to take motion pictures of whooping cranes and ducks and banding and trapping activities.

Preliminary Report on Waterfowl.--A summary of the waterfowl situation, made from fall questionnaires received thus far, shows an increase of approximately 25 percent in waterfowl this season over last year on the Atlantic, Mississippi, and Pacific Flyways. On the Central Flyway, however, a decrease of 30 percent is shown. A final study of the questionnaires may modify the preliminary figures.

Interesting Returns from Banded Birds.--The following are returns of outstanding interest from banded birds, showing band number, place and date of banding, and place and date of recovery:

Pied-billed grebe:

36-412807, S. Dak., Columbia, 6/25/37

Okla., McAlister, 10/10/37

Great black-backed gull:

422581, Nova Scotia, Wolfville, 7/22/27

N. S., Cape Sable, 8/15/37

Caspian Tern:

325945, Mich., St. James, 7/21/24

S. A., Pestagua Is., Magdalena Delta, Colombia, 12/11/37

Black duck (hand reared):

35-524073, N.Y., Riverhead, 8/?/35

Minn., Lake Winnibigoshish, 10/21/37

36-639460, " " 8/?/36

Wis., Trempealeau Co., 11/5/37

Blue-winged teal:

38-502623, Ont., Wellington, 9/16/37

B.W.T., Barbuda Is., 10/28/37

Greater scaup:

321571, Oreg., Mohler, 12/23/26

Oreg., Mohler, retrapped and released 3/3/27, 2/17/28, 1/3/35, 1/5/38.

Egret:

36-719303, Miss., Glen Allan, 5/24/36

Sask., Davidson, 8/4/37 (first record for this species in Saskatchewan; skin preserved in Regina museum.

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Swainson hawk:

36-607606, Kans., Stockton, 10/2/36

Alta., Hussar, 8/18/37

Night hawk:

B247021, Conn., Hamden, 6/13/33

Conn., Hamden, 7/20/37
(trapped and released).

Cowbird:

34-248842, Ill., Waukegan, (shipped
to Boston, Mass., where released)
5/19/37

Tex., Nome, 11/19/37

White-throated sparrow:

38-109609, N.Dak., Fairmount, 9/30/37

Minn., Minneapolis, 10/6/37
(trapped and released).

Cliff swallow:

34-95949, S.Dak., Dell Rapids, 6/14/37

W.Va., Ghent, 7/16/37

Cedar waxwing:

34-179158, Calif., Modesto, 2/17/35

Ala., Phenix City, 1/8/38
(The second return for
a cedar waxwing banded
in Calif. and taken in
Alabama).

Chickadee:

F76416, Mass., Lenox, 12/14/31

Mass., Lenox, 12/10/37
(trapped and released).

Fur Resources

Confer on Imported Dog-Skin Litigation.--During January Frank G. Ashbrook, in charge of the Section of Fur Resources, attended two conferences at the Bureau of Customs, on pending litigation involving the importation of dog skins from China. Others attending were R. W. Frey, of the Bureau of Chemistry and Soils, and R. C. Bowker and R. B. Hobbs, of the Bureau of Standards. Certain importers contend that the skins are duty free and have recovered large sums in court actions against the Government. The Tariff Commission, however, specifies that the skins are dressed, and, therefore, subject to duty. Information on certain phases of the importation of these skins and a number of skins and processing materials that Mr. Ashbrook and other persons obtained in China last summer have been turned over to customs officials. Specimens of skins and materials used in processing them, which were collected by a United States Treasury attache at Shanghai, China, were examined at the conferences. Both Mr. Frey and Mr. Ashbrook appeared as Government witnesses in the case involving the importation of these skins in the Court of Customs and Patent Appeals in New York City, on January 24.

Inspects Field Station.-- On January 5 and 6, Mr. Ashbrook inspected the work at the newly established Fur Animal Field Station at the Blackwater Migratory Bird Refuge, Md. Traps for taking muskrats alive were set

at the beginning of the open season to obtain animals for use in experiments being conducted in cooperation with a trap company. These experiments are being supervised by Dr. Herbert L. Dozier, who is in charge of the work at the station, and by a representative of the trap company. A census of the muskrat houses on the refuge is being made, and under the direction of Fred W. Price, who is assisting Dr. Dozier, land and underbrush are being cleared around the muskrat pens and mink houses so they will be in good condition when animals are placed in them.

Participates in Wildlife Conference.--Mr. Ashbrook was chairman of the technical session on fur and fur animal management, held February 15, in connection with the third North American Wildlife Conference at Baltimore, Md. He also presented a paper on "Preventing Waste of Fur Trapping When Pelts are not Prime." Other papers prepared by Bureau members and presented at this session were as follows: "Do Fur Bearers Affect Upland Game Birds in Winter?", Watson E. Beed; "Reproductive Cycles and Fur Animal Management," Dr. Robert K. Enders; "Why Study the Food of Fur Animals?" Dr. Clarence Cottam and A. L. Nelson. The paper, "Reproductive Cycle of the Coyote," by G. W. D. Hamlett, formerly of the Bureau, was reviewed by Chas. E. Kellogg.

Begin Research on Minks.--Research on the reproductive cycle of the mink in cooperation with the Carnegie Institution of Washington, is being undertaken by Dr. Robert K. Enders, of the department of zoology, Swarthmore College, Swarthmore, Pa., who has been named a biologist under an allotment from the Bankhead-Jones special research fund. He is conducting his investigations at the embryological laboratory of the Carnegie Institution at Johns Hopkins University, Baltimore, Md., using materials supplied by the Bureau.

Makes Trip to Pacific Coast.--Chas. E. Kellogg left December 30 for the U. S. Rabbit Experiment Station, Fontana, Calif., where he conferred on research work with director George S. Templeton. The two visited a number of fox ranches in the San Bernardino Mountains, and attended the American Rabbit and Cavy Breeders Association convention at Colorado Springs, Colo., January 10 to 14. Mr. Kellogg also visited several fur farms near Denver, Colo., and then returned to the Pacific coast to confer with Bureau officials at Corvallis and Portland, Oreg., on fur-resource investigations. From Portland he went to Seattle, Wash., and visited a number of fur farms and conferred with members of the Puget Sound Fox Breeders Association and officials of the Seattle Fur Exchange. Completing his work on the Pacific coast, he returned to Colorado and gave three talks on fur-animal investigations at the annual short-course meeting of the Rocky Mountain National Fur Growers Association held at Fort Collins, January 31 to February 4. Before returning to Washington he went to Thiensville and New Holstein, Wis., to discuss results of the cooperative research recently completed on silver fox pelts.

Visits Southeastern States.--After attending the convention of the American Rabbit and Cavy Breeders Association at Colorado Springs, Colo., George S. Templeton, of the U. S. Rabbit Experiment Station, left for Kansas City, Mo., Memphis, Tenn., Starkville, Miss., Birmingham, Ala., and Atlanta, Ga., where he discussed with rabbit breeders and professors of animal husbandry at agricultural colleges the research work under way at the station.

Supplies Minks for Disease Research.--Charles E. Bassett, director of the U. S. Fur Animal Experiment Station, Saratoga Springs, N. Y., recently shipped 15 minks from the station to Dr. L. C. Morley, at the Patuxent Research Refuge, Md., for use in disease investigations.

Disease Control

Participate in Wildlife Conference.--Dr. J. E. Shillinger was chairman of the technical session on wildlife diseases, held February 16, at the North American Wildlife Conference, Baltimore, Md. He also presented a paper on "Deer in Relation to Tick Fever Eradication in Florida," and, with Miss P. W. Wetmore, was co-author of another paper on "Sarcosporidiosis, a Protozoan Disease of Wildlife." Dr. F. D. McKenney presented a paper on "Malignant Edema in Deer." C. L. Larson was one of the authors of a paper on "The Natural Occurrence of Shock Disease in Hares." The subject of a paper by Dr. D. R. Coburn and Dr. E. R. Quortrup was "The Distribution of Botulinus Toxin in Duck Sickness Areas."

LAND ACQUISITION

Confer on Refuge Land Legislation.--During the week of February 14, Mr. Dieffenbach and S. P. Meyers, of the Office of the Solicitor, conferred with the secretary of the State Commission of Game and Inland Fisheries at Richmond, Va., on suitable State legislation for giving the Biological Survey complete jurisdiction over the waters and lands underlying water contiguous to the lands being acquired for the Back Bay Migratory Waterfowl Refuge in Back Bay, Va. The attorney general of the State was also consulted and the draft of a bill approved by him was referred for introduction into the General Assembly now in session.

On the same trip, Mr. Dieffenbach and Mr. Meyers also conferred with the U. S. District Attorney in Richmond, and later at Norfolk, with the Assistant U. S. District Attorney, regarding necessary legal proceedings for acquiring lands under purchase agreement in the Back Bay Refuge, especially the declaration of taking part of the Princess Anne Club property. An inspection of the lands was made with representatives of the Division of Construction and C. C. C. Operations with a view to selecting and later negotiating for a suitable site for the C.C.C. camp on the refuge. Those with whom the inspection was made were Mr. Walker and Mr. White, chief foreman of the C.C.C. work at Pea Island, S. C., and Mr. Whitehurst, superintendent of the Sand Bridge Club, the prospective site for the C.C.C. camp.

Acquire Title for Refuge Tract.--On February 24, a declaration of taking was filed in court and judgment entered for the major part of the Princess Anne Club tract in the Back Bay Migratory Waterfowl Refuge, Va. Other legal steps necessary for completing this acquisition were also taken. As a result of this action the Government is in full possession of the lands covered by the declaration and the property can now be administered as refuge lands under the jurisdiction of the Biological Survey. In this case the vesting of the title in the Government was particularly important as title must be held by the Government in order for a C.C.C. camp assigned to the refuge to begin operations there this spring.

Represents Bureau on Department Committee.--Mr. Dieffenbach is representing the Bureau on a committee named by the Department's Coordinator of Land Use Planning to study the problem of tax losses to States incurred through the purchase or acquisition of land by several Bureaus and make recommendations for improving this situation.

Migratory Bird Conservation Commission Meets.--A meeting of the Migratory Bird Conservation Commission was held December 9, with the following members present: Secretary Wallace, chairman of the Commission; Assistant Secretary of the Department of Interior Chapman; Glenn C. Leach, representing Secretary Roper of the Department of Commerce; Senator Key Pittman, Representative Sam D. McReynolds; and Representative James Wolfenden. Also attending from the Department were A. H. McConville, of the Office of the Solicitor, Mr. Henderson, Mr. Salyer, Mr. Dieffenbach, who is secretary of the Commission, Robert M. Rutherford, Elmon Radway, and William A. Schmidt.

The program presented to the Commission included several memoranda on the progress and special problems pertaining to the acquisition of lands and, in addition, 69 proposed individual purchases. These involve a total of 18,648 acres and a proposed expenditure of \$131,417.85, at an average cost of \$7.05 per acre. The Commission approved the acquisition of all of the purchases recommended with the exception of the suggested acquisition of Trempealeau Bottoms in Buffalo and Trempealeau Counties, Wis., where arbitrary condemnation has been involved. In this instance, by reason of the high awards made by the Commissioners in Condemnation, the Migratory Bird Conservation Commission decided to defer action.

Surveys and Maps

Plan Surveys for Fence Construction.--Arthur A. Riemer, in charge of the Section of Surveys and Maps, recently conferred in Des Moines, Iowa, with Regional Director George Tonkin (Region 4--West Central), Charles S. Cook, and O. W. Teckemeyer on plans for beginning cadastral surveys on the Tamarac, Mud Lake, North Platte, and Long Lake Refuges for staking boundary lines preliminary to fence building which is to begin this spring.

Inspects Survey Work on Montezuma Refuge.--Mr. Riemer returned recently from an inspection to the Montezuma Refuge in New York, where cadastral surveys are necessary for acquiring land and determining boundary limits. Despite weather conditions, work on the project has progressed during the winter and is expected to be completed during March.

Surveys on Patuxent Refuge.--Cadastral surveys required in connection with the acquisition of additional lands on the Patuxent Research Refuge, Md., have been completed by Oswald E. Recroft, assistant cadastral engineer. The lands involved comprise an extension to the refuge of an area on the north side of the Patuxent River. Some of the land being acquired was originally part of a tract of land known as Robin Hood's Forest, containing 1,970 acres, which was patented on August 1, 1686. Lands in Maryland were designated by name when surveyed and prior to issuance of patent. Some of the names of other tracts within the lands being acquired are "Snowden's New Birmingham," "Water's Lott", "Contention", "Talbot's Adventure", "The Lott", "Friendship", and "Batson's Vineyard Rectified."

Refuge Maps Completed.--Tract maps of the Bureau atlas of the Ruby Lake Migratory Waterfowl Refuge, Nev., have been completed and are now available for administrative use. Requests from the field for copies should be addressed to Regional Director William M. Rush (Region 1---Pacific), Portland, Oreg.

Personnel.--Oswald E. Recroft, assistant cadastral engineer with headquarters at Des Moines, Iowa, is in Washington on detail. William E. Winterhak was appointed junior engineering draftsman on December 16, to fill a vacancy. Raymond F. Moss, assistant engineering aide, was transferred to the General Land Office on December 26.

Appraisals and Negotiations

Assists in Condemnation Cases.--Fred Kessler was in Tallahassee, Fla., and nearby points recently to assist in pending condemnation cases and in the preparation of abstracts of title for the acquisition of lands within the St. Marks Refuge. While there he conferred with attorneys of the Departments of Agriculture and Justice to assist in expediting and satisfactorily condemning the lands involved in several suits. Mr. Kessler also conducted negotiations for acquiring certain lands owned by a turpentine company and for bringing about the exchange of other land owned by the company for property now in the process of acquisition. These lands are needed to consolidate the refuge and it is hoped to reduce the purchase cost through these negotiations.

Prepares Abstracts of Title.--On February 26, Mr. Kessler went to Norfolk, Va., to prepare abstracts of title for the Ragged Island Club property, which was approved for purchase by the Migratory Bird Conser-

vation Commission on December 9, as an addition to the Back Bay Migratory Waterfowl Refuge, Va., and to confer with representatives of the club on the execution of legal papers for conveyance of the club's lands. He also conferred with the Assistant U. S. District Attorney on this project.

Examines Land on Wolf Island, Ga.--Elmon Radway has completed an examination of an extensive body of land on Wolf Island, Ga., which the Biological Survey may accept in exchange for Sapelo Lighthouse Reservation, an area formerly under the jurisdiction of the Department of Commerce. Negotiations for the exchange are under way. Although the Sapelo property is useful to the Bureau, it is much smaller and is considered less valuable for bird refuge purposes than the Wolf Island property, which contains lands highly valuable for migratory waterfowl and shorebirds.

WILDLIFE REFUGES

Directs Session on Waterfowl Management.--Mr. Salyer was chairman of the technical session on waterfowl management held February 15, at the North American Wildlife Conference at Baltimore, Md., and on the following day also participated in conference's general session on the Federal waterfowl refuge program. Other papers prepared by Bureau members and presented at the technical session were as follows: "Wood Ducks in the Illinois River Bottoms," Gilbert K. Gigstead; "Habitat Restoration and Faunal Responses on Federal Wildlife Refuges," W. F. Kubichek; "A Comparative Study of Nesting Waterfowl on the Lower Souris Refuge, 1936-37," E. R. Kalmbach; "Development of Federal Refuges," M. O. Steen; "Management of Waterfowl Public Shooting Grounds," Vanez T. Wilson; "An Evaluation of Nesting Cover for Waterfowl, Bear River Refuge, Utah," Cecil S. Williams and William H. Marshall; "Redhead and Ruddy Duck Nesting in Iowa," Dr. Logan J. Bennett.

New Refuges Established.--Four new migratory waterfowl refuges--the Lacassine and Sabine Refuges, La., the Black Coulee Refuge, Mont., and the Hazen Bay Refuge, off the west coast of Alaska have been established and the Huron Bird Refuge, Mich., enlarged by recent Executive Orders.

The Lacassine Refuge, in Cameron Parish, contains approximately 33,400 acres, and is situated about 20 miles inland from the Gulf of Mexico. Large numbers of waterfowl winter there, and with additional improvements the refuge is expected to become one of the Bureau's leading sanctuaries. The Sabine Refuge contains 143,100 acres, including the entire Orange-Cameron Land Company tract. It was formerly used as a muskrat farm. Many species of ducks and geese use the area during winter and various game and fur animals also are found there. The Hazen Bay Refuge is formed by Nunivakchak and Krigegak Islands. The Huron Islands near the south shore of Lake Superior, containing about 147 acres, form the Huron Refuge. The Black Coulee Refuge covers about 1,160 acres in Blaine County, Mont. Use of the land within the refuge was granted to the Bureau through perpetual easements.

Easement Refuges Attract Many Ducks.--M. O. Steen, project administrator in charge of the easement refuges in North Dakota and Montana, reports that there were great numbers of ducks on the North Dakota refuges during the fall migration period and the past hunting season. One of Mr. Steen's patrolmen, a former State game warden, said "The ducks and geese took possession of the refuges after the first day of the open season. There were about 100,000 ducks and 500 geese on Dakota Lake (2,520 acres) and approximately the same number on Tewaukan (4,548 acres). I would say that these were about 40 percent mallards, 20 percent pintails, 20 percent shovelers, 15 percent blue-winged teals, and 5 percent canvasbacks and redheads. I saw only a few flocks of bluebills during the open season, but more canvasbacks than I have seen in all the last 20 years put together. It was great to see these refuges packed with ducks. I saw more this fall than at any one time in 20 years."

Long Lake, Willow Lake, Rock Lake, and Ardoch Lake, Mr. Steen reports, were great concentration points during the migration period. Several hundred white-fronted geese stayed on Long Lake about six weeks this fall, as well as a large number of Canada geese. He says that these are the first geese he has seen on Long Lake in any fall since 1920.

Waterfowl Increase on Upper Mississippi Refuge.--In a recent report from the Upper Mississippi Wildlife and Fish Refuge, it is estimated that the waterfowl population of this refuge increased from 774,300 in the fall of 1934 to approximately 1,977,600 in the fall of 1937. Baldpates alone increased from 6,000 to 180,000 in that period. A startling decrease in the lesser scaup, however, was noted - from 180,000 in 1935 to 12,000 this fall.

Many Ducks on White River.--An inventory of waterfowl by Robert H. Smith, associate biologist, on 11 baited areas on the White River Migratory Waterfowl Refuge, Ark., showed that there were at least 25,750 ducks on these areas on November 30, approximately 10 percent more than at that time last year. Mr. Smith points out that waterfowl were considerably more abundant this year over the entire refuge. The species observed have been mostly mallards, with pintails, wood ducks, black ducks, green-winged teals, ring-necked ducks, hooded mergansers, lesser scaups, gadwalls, baldpates, and red-breasted mergansers following in the order named.

Bird Shelters Prove Sanctuary to Grouse.--According to Chandler R. Young, manager of the Lacreek Migratory Waterfowl Refuge, S. Dak., the value of the brush-heap bird shelters constructed is becoming more apparent. He reports that recently while W.P.A. workers were piling brush on one of these newly constructed shelters, a prairie falcon flushed a covey of sharp-tailed grouse about 300 yards away. The birds flew directly to the shelter, got under the brush, and remained there while the laborers continued to work on it.

White-fronted Geese Stop at Refuge.--Mr. Young also reports that two flocks of white-fronted geese, about 55 in number, stopped at the Lacreek Refuge this fall. As far as he can recall this is the first time that this species ever stopped there.

Many Ducks on Lower Souris.--C. J. Henry, manager of the Lower Souris Migratory Waterfowl Refuge, N. Dak., estimates that there were approximately 200,000 waterfowl on the Lower Souris Refuge during the height of the fall migration, 180,000 of which were mallards. Other species, listed in the order of their abundance, were scaups, gadwalls, blue-winged teals, pintails, shovelers, wigeons, green-winged teals, redheads, canvasbacks, ruddy ducks, white-fronted geese, Canada geese, and swans.

Waterfowl Arrived Early on Upper Souris.--In the October narrative report for C.C.C. Camp BF-1, Upper Souris Migratory Waterfowl Refuge, N. Dak., Rae Kneeshaw, senior foreman, reports: "Due to an early snow in western Canada, we had some early callers this year. We were honored by visits from numerous Canada honkers, white-fronted geese, swans, and mallards too many to count. Besides these, there were a few redheads, buffleheads, canvasbacks, and ruddy ducks. The geese did not stay with us long, stopping only for a breathing spell and a fill of the corn and barley we had planted for them. We had more partridges, grouse, and pheasants than I have ever seen before in this part of the country. They fed in our corn and barley fields and spent most of their time in them."

More Waterfowl on Upper Souris.--Robert W. Dougall, manager of the Upper Souris Migratory Waterfowl Refuge, N. Dak., reports that there were more waterfowl, especially ducks, on this refuge during the fall migration this year than in many years past.

Good Shooting Near Waubay.--Watson E. Beed, junior refuge manager, of the Waubay Migratory Waterfowl Refuge, S. Dak., reports that the number of ducks on the Waubay Refuge during October was particularly high, as many of the birds were probably driven onto the refuge from surrounding lakes and potholes at the beginning of the hunting season on October 9. Mr. Beed says that hunters in the vicinity of the refuge reported much better shooting this year than in previous seasons.

Large Concentration on Muleshoe.--William T. Krummes, associate refuge manager, stationed at Albuquerque, N. Mex., reports that he observed approximately 30,000 mallards and pintails on the comparatively small Muleshoe Migratory Waterfowl Refuge, Tex., the latter part of December. Early in December, when most of the Panhandle lakes froze over, thousands of birds concentrated on Goose Lake, which did not freeze over then.

Frenchglen Hotel to be Modernized.--Plans have been completed and materials are being assembled for the extensive remodeling of the Frenchglen hotel on the Malheur Migratory Bird Refuge, Oreg. A 20-foot addition is to be built on the rear of the present building and the interior modernized with the installation of a heating plant, running water, and bath. Since the hotel at Burns, the only other nearby place in which tourists and officials visiting the refuge could be quartered, was destroyed by fire last summer, it is necessary to improve the Frenchglen hotel to accommodate the many visitors each year. It is expected that it will be ready for use by spring. Mr. and Mrs. Joe McDonald, who are in charge of the hotel, are expected to continue as managers.

Bear River Refuge Attracts Tourists and Hunters.--Vanez T. Wilson, superintendent of the Bear River Migratory Bird Refuge, Utah, reports that from April 6 to October 31, 1937, a total of 4,947 persons, from 38 States and 3 foreign countries, visited the refuge, exclusive of hunters. They were shown only areas in which there was little or no nesting. He reports that during the hunting season practically all hunters who used the refuge cooperated with officials by observing refuge laws and regulations. A total of 2,532 hunters, who registered at the checking station during the season, took a total of 7,809 birds, or an average of about 3 birds per man-day, which was slightly lower than in 1936, when 1,316 hunters took a total of 5,488 birds. More pintails than other species were shot, with mallards, green-winged teals, gadwalls, and shovelers following in the order named. Ducks in general were abundant on the refuge. Only 25 Canada geese were killed on the refuge during the entire open season, and the increase in this species this year over last was distinctly noticeable.

Violators of Refuge Regulations Arrested.--Ray C. Steele, superintendent of the Upper Mississippi Wildlife and Fish Refuge, reports several interesting violations of refuge regulations. On the night of December 16, Refuge Manager Andrew E. Schmitt stopped an automobile that was cruising along the highway and questioned the driver, who, he learned, was an Indian, planning to meet three companions who were spearing muskrats on the refuge between Alma and Nelson, Wis. Mr. Schmitt and a deputy Wisconsin conservation warden instructed the Indian to accompany them to a point where he was to meet his companions and then give the prearranged signal that all was well. When the Indian flashed his carlight three men came out of the bottoms. They were arrested after muskrat spears and 61 freshly speared muskrats were found in their possession.

On the following night Game Management Agent Roy R. Ferguson came upon three men spearing muskrats as he was patrolling the Mineiska bottomlands. They threatened him with their spears and resisted arrest. Two escaped, but the third was placed in the Winona County, Minn., jail the following morning after a chase of several miles, during which Mr. Ferguson crossed the dangerous Mississippi River channel twice. Reservation Ranger Homer F. Hall apprehended a man and boy hunting rabbits on the refuge at night on December 16.

Summarizes Shooting Conditions.--Archie V. Hull, refuge manager of the Red Rock Lakes Migratory Waterfowl Refuge, Mont. reports that during the hunting season, a total of 191 man-days were devoted to hunting on the open part of the refuge and that a total of 772 ducks, 3 Canada geese, and 34 coots were killed. This averages about 4 ducks for each man during the entire open season. According to Mr. Hull, the lake remained open during the entire season, permitting the hunters to shoot the full 30 days. Last year they were able to shoot only 19 days before the lake was frozen over. Hunting on the refuge this year was not so good as last, as the birds that normally migrate through the Red Rock Lakes region probably were influenced this fall by the mild weather in Canada and in areas farther south and west.

Mallards Wintering on Waubay.--Seventy mallard ducks are wintering on the Waubay Migratory Waterfowl Refuge, S. Dak., reports Watson E. Beed, refuge manager. A self-feeder has been constructed and placed on the shore of Spring Lake, where the ducks defy the winter winds to enjoy the 45-degree water that comes from the spring just east of the lake. The feeder is filled with barley and corn, and the ducks visit it when they are unable to find enough natural food elsewhere. The remainder of Spring Lake is frozen over except the section close to the creek, which is fed from the spring.

Lower Souris Refuge Enlarged.--By Executive order dated January 27, approximately 10,545 acres were added to the Lower Souris Migratory Waterfowl Refuge in Bottineau and McHenry Counties, N. Dak. This refuge was established by Executive order of September 4, 1935.

In Washington.--The following field personnel of the Division spent a few days in the Washington office following the Wildlife Conference at Baltimore February 14-17: M. O. Steen, easement project administrator, Bismarck, N. Dak.; Ward M. Sharp, refuge manager of the Valentine Migratory Waterfowl Refuge, Valentine, Nebr.; Ray C. Steele, superintendent of the Upper Mississippi Wildlife and Fish Refuge, Winona, Minn.; Gilbert E. Gigstead, manager of the Tamarac Migratory Waterfowl Refuge, Detroit Lakes, Minn.; and Watson E. Beed, manager of the Waubay Migratory Waterfowl Refuge, Waubau, S. Dak.

Personnel Notes.--The following persons have been appointed junior clerk-stenographers in the regional offices to assist in the Bureau's W.P.A. activities: Lillian W. Wienser, Milwaukee, Wis.; John A. Edwards, Denver, Colo.; Marian J. Gregory, Omaha, Nebr.; and Marguarite L. Howard, Des Moines, Iowa.

Edward R. Boultinghouse was appointed laborer-patrolman on the Valentine Migratory Waterfowl Refuge, Nebr., on January 3.

Eugene Cypert was appointed junior biologist on the White River Migratory Waterfowl Refuge, Ark., on January 6.

Wyoming Governor Visits Elk Refuge.--Gov. Leslie A. Miller, of Wyoming, visited the Elk Refuge on January 10, 11, and 30. On his first trip he and several State highway officials, whom he had met at Jackson, saw about 5,000 elk on the refuge at close range. They were escorted over the area by Refuge Manager Almer P. Nelson.

On January 30, the Governor arrived with a party of newsreel men and a number of prominent citizens of Wyoming. Regional Director Leo L. Laythe (Region 2--Mountain) had met the Governor and his party at Kemmerer, Wyo., and accompanied him to the refuge. Through the cooperation of the State highway department the snow-covered roads on the refuge were opened to travel, and a circular road about three-eighths of a mile was plowed in a field near the headquarters where the elk had congregated. Four motion-picture cameras were set up on one of the sleighs that Mr. Nelson had arranged for the visitors, and the hayracks were partly loaded with hay. From one of the sleighs the Governor pitched hay to the elk that followed. After the motion pictures were taken other visitors climbed on the hayracks and were conducted through the herd. It is estimated that at least 600 persons, many from Idaho, visited the refuge during the day. In addition to the elk near headquarters, there were about 3,000 in view on the adjoining Flat Creek swamp area.

After his visit, the Governor wrote to Mr. Nelson: "It was a long and rather arduous trip to make to get so brief a glimpse of wildlife, but if any members of the party felt they did not get their money's worth, they were certainly good actors, for I have never been with what appeared to be a more congenial crowd or one more satisfied."

The elk feeding on the refuge are reported to be in excellent condition and only three of the animals have been found dead this season. A number of mule deer have been observed in the vicinity, and about 40 mountain sheep are wintering along Flat Creek. The State Highway Department is keeping the road from Jackson to the refuge headquarters open during the winter, and also the Teton Pass road from Jackson to Victor, Idaho.

White-Tailed Buck Killed in Fight.--Two white-tailed deer bucks at the Wichita Mountains Wildlife Refuge, Okla., engaged in a battle in January, which resulted in the death of the younger animal. C.C.C. enrollees of Camp Panther Creek BF-2 found the animals on January 9, with horns interlocked. The smaller, a 4-point buck, was dead and being dragged around by the larger one. Both deer were taken to headquarters after the boys captured the live one. The dead animal had been severely gored on the inside of its left hind leg and much hair on its back had been worn off from being dragged on the ground. The older buck, which was temporarily placed in a pen for observation, had been gored in the mouth, but did not appear to be seriously injured.

Dispose of Surplus Big-Game.--There has been great demand for the Survey's surplus big-game animals this season, and nearly all those designated for disposal have been sold or donated to parks, zoos, or Indian

agencies. All the buffalo and elk, and a considerable number of mule deer, listed for disposal from the herds at the National Bison Range, Montana, have been removed. No surplus animals remain for disposal at Fort Niobrara Game Preserve, Nebr., and the greater number of those offered for sale at the Wichita Mountains Wildlife Refuge, Okla., and Sullys Hill Game Preserve, N. Dak., have been sold or otherwise disposed of. Of the elk at the National Bison Range, 120 donated to the Mineral County Chamber of Commerce and the State Game Commission of Montana, were transferred to points within 35 miles of the Bison Range for stocking areas in those localities. The elk were distributed as follows: 21 at Pardee Creek (2 1/2 miles west of Superior, Mont.); 31 at Spring Gulch (6 miles west of Superior); 22 on Four Mile Flat (3 miles east of St. Regis, Mont.); and 46 just below the ferry on the St. Regis-Paradise Road. The animals included 36 mature bulls, 57 mature cows, and 27 calves. R. W. Spangler, secretary-treasurer of the Mineral County Chamber of Commerce, Superior, Mont., wrote to Dr. Robert S. Norton, in charge of the Bison Range, that at their January meeting he was instructed to express the Chamber's appreciation for the elk and also for the manner in which the Bison Range personnel rounded up and loaded the animals.

Transfer Albino Buffalo Calf and Companion.--The albino male buffalo calf, born at the National Bison Range, Mont., on May 8, 1937, was transferred along with a normal buffalo heifer born at the Range the same month, to the National Zoological Park, Washington, D. C., where they arrived in good condition on December 17 and are attracting considerable attention. The albino calf was deserted by its mother soon after birth, probably because it was blind and could not follow her very well. The young heifer's mother died soon after it was born. Both calves were taken to the range headquarters where they were nursed by a domestic cow and thrived well. The two young buffalo became devoted companions and when it was decided to transfer the albino to Washington, it was deemed advisable to send the heifer with him, as he became frightened when he was not able to find her in the corral.

Antelope Migrate from Summer Range.--During a period of stormy weather early in October the antelope on the Hart Mountain Antelope Refuge, Oreg., left the higher summer range, and those on the southern part moved eastward, according to Superintendent Jean F. Branson. A census from October 19 to 26, showed a total of 2,364 antelope on the refuge and 791 outside of the southern boundary, but none on the higher elevations or on the north or northeastern parts.

Observations made on November 8 and 9, showed only 233 antelope on the area, which indicated that migration was well under way. Early in December some of the animals returned, and by the middle of the month large numbers were back. Most of them, however, left again just before another stormy period broke.

Half the antelope had shed their horns by November 8, and the others lost theirs shortly afterward. Superintendent Branson says that the antelope appeared to be in fine condition. He reports that 123 mule deer, observed on the refuge during a heavy snow and wind storm on November 23, also were in good condition. Range conditions on the refuge have been greatly improved by heavy fall rains, and only a few areas are without abundant water. All livestock, except a few scattered bands of wild horses, have been removed from the range lands.

Endorse Grazing Policy for Refuge.--George E. Mushbach, superintendent of the Wichita Mountains Wildlife Refuge, Okla., discussed the benefits wildlife receive from the Bureau's refuge program at the second annual wildlife conservation short course held November 17 to 19, at the Oklahoma A. & M. College, at Stillwater. He pointed to the Bear River and Wichita Refuges as typical examples of areas where wildlife has benefited greatly.

Mr. Mushbach also announced that no grazing permits on the Wichita Refuge would be issued this year. Later during the conference, Dr. C. E. Sanborn, a member of the college faculty and presiding officer of the conference, announced that the federation of conservationists in Oklahoma is supporting the Bureau's grazing policy. A resolution approving this policy was adopted later, and copies of the resolution sent to Oklahoma members of Congress.

Note Increase in Prairie Chickens.--Mr. Mushbach reports that employees of the Wichita Refuge recently saw a flock of 17 prairie chickens on the refuge. The largest flock observed up to that time was 10. Plantings had been made in previous years, but it was believed that few of the birds had survived.

"While it is, of course, too early to predict a 'comeback' of prairie chickens on the refuge," Mr. Mushbach says, "it is encouraging to know that we have more this year than last."

Fishes Planted in Refuge Lakes.--Continuing to supply the lakes on the Wichita Refuge with fishes whenever possible, A. J. Manning, superintendent of the State Fish Hatchery at Medicine Park, Okla., in January donated 95,000 fingerlings to the refuge, which were planted as follows: 15,000 bullheads, 5,000 perch, 5,000 crappie, and 5,000 bream in Lake Quaneh Parker; 10,000 each of crappie, bream, and bullheads in Lake Jed Johnson; and 15,000 crappie, 10,000 largemouth bass, and 10,000 bullheads in Lake Elmer Thomas.

Severe Weather Hits Refuge.--On December 14, freezing rain sheathed the Wichita Refuge with a heavy coating of ice that broke limbs on many trees. Juniper and oak trees appeared especially hard hit. The telephone line from headquarters building to Cache was broken in 6 places, and much of it had to be replaced with new wire. Other sections of Oklahoma experienced similar severe weather conditions on that date.

Two Deer Die at Sullys Hill Preserve.---Wesley D. Parker, in charge of Sullys Hill Game Preserve, N. Dak., reports that a buck white-tailed deer and a mature doe were found dead on the preserve on December 27 and 28, respectively. The doe had been donated to the preserve in 1935 by a resident of Grand Forks, N. Dak. Dr. H. L. Kester, Government veterinarian stationed at Devils Lake, N. Dak., examined the body of the buck, but could not determine the cause of death. The body of the doe was too badly frozen for a satisfactory examination. Both animals, however, appeared in good condition. Dr. J. E. Shillinger, in charge of the Bureau's disease investigations, reports that similar cases have been observed in other areas and that autopsies showed no visible signs of disease, as the destroying organisms were probably toxin producers and caused death without destroying any important body tissues. He doubts that feed caused the death of the deer there but thinks that more likely, the animals were affected by certain soil bacteria that had gained entrance into the bodies and became pathogenic.

Fire Destroys Hay at Bison Range.---Early in November, 600 tons of baled hay and 100 tons of cottonseed cake were transferred from the Elk Refuge, Wyo., to the National Bison Range, Mont., for feeding big-game animals, but during the night of November 10 or 11, fire destroyed 180 tons of the hay that had been stacked near the corrals on the range. An investigation is under way to determine the cause of the fire.

Many Visitors at Sullys Hill.---During the calendar year 1937, the visitors at the Sullys Hill Game Preserve, N. Dak., numbered 21,499. A total of 4,338 automobiles entered the refuge. Although most of the visitors came from localities within 40 miles of the preserve, there were many from other States.

Elk Tagged in 1913 Killed in Arizona.---Regional Director D. A. Gilchrist (Region 3 - Southwestern) reports that a large bull elk bearing a Survey tag in its ear was killed on Clear Creek, near Winslow, in Ariz., in November during the open elk season. It apparently was one of the animals that were transferred from the Yellowstone National Park, Wyo. in 1913 for stocking areas on the Sitgreaves National Forest, about 40 miles southwest of Winslow, Ariz. The Bureau cooperated with State officials in transferring and tagging the animals.

Of the 83 elk shipped from Yellowstone Park, 8 died and 5 escaped before reaching the place where they were to be released. Since then they have extended their range west to the Coconino National Forest and have been reported as far as 100 miles from the point of liberation. E. A. Goldman, of the Survey, and M. W. Talbott, of the Forest Service, during their investigation of elk conditions there in 1919 and 1920 found the animals thriving, but widely scattered. Although it was impossible, at that time, to make accurate estimates of the number of elk in the two forests, it was believed that the herd numbered about 500.

GAME MANAGEMENT

Attends Alaska Commission Meeting.--Mr. Crouch, accompanied by George Hossick, left early in February to attend the annual meeting of the Alaska Game Commission, and returned to Washington, March 10. Among the matters considered were next season's hunting and trapping regulations. En route to Alaska Mr. Crouch stopped at several points for conferences with Survey officials and State game commissions on cooperative work.

Game Management Agents

Hubbard Dies of Gun Wound.--Deputy Game Management Agent Delbert Hubbard died at a Poplar Bluff, Mo., hospital on January 11, of an accidental gun wound in the leg that he received while pursuing law violators near Poplar Bluff. The gun discharged as he was drawing it and running up a river bank. The shot entered the leg immediately below the thigh, ranged downward, and lodged against the knee cap. His condition at first was reported favorable but later became worse. He was appointed deputy game warden in October 1933, and a year later was named deputy game management agent, pending certification of eligibles. He accepted probational appointment on September 1, 1935, and since that time had been assigned to enforcement work in Region 4. He is survived by his widow.

Waterfowl Abundant in Idaho.--Game Management Agent George M. Riddick reports that waterfowl of most all species have been abundant in Idaho this season. He saw approximately 10,000 buffleheads along the Snake River and ruddy ducks in practically all localities visited. The hunters of Idaho, he adds, enjoyed excellent shooting this season.

Observe 3,000 Sandhill Cranes.--On December 3, Game Management Agent Vernon D. Yelton and T. A. Harris, a Texas State deputy game warden, found a large roost of sandhill cranes 8 miles northwest of Lamesa, Tex., on a dry lake bed, which after carefully observing the area two evenings, they estimated at 3,000.

Furness Transfers.--Milton J. Furness, senior administrative assistant in the Division since October 1, 1936, transferred to the Regional Office at Omaha, Nebr., on February 16.

Shaver Retires.--Game Management Agent B. J. Shaver, of St. Paul, Minn., retired from active service on March 1, after having served as an enforcement officer since January 1, 1918.

Law Enforcement

Fur Smugglers Punished.--Arrest of three men on charges of illegally importing Canadian silver fox furs into New York City and punishment by Federal Court occurred during December as a result of investigations by law enforcement officials of the Bureau, customs offi-

cials, and New York City detectives. The three men pleaded guilty upon arraignment in the Federal Court on December 29. One was fined \$50 and placed on probation 3 years; another was fined \$500 and placed on probation for the same period; and the third drew a fine of \$200 and a 1-year suspended jail sentence.

Late in November, F. P. Callaghan had conferred in New York with Regional Director Bertrand Smith (Region 8 - Northeastern) and game management agents regarding plans for halting the smuggling of furs. On December 1, a shipment of furs that apparently had been smuggled from Canada was located. Further investigation led to the arrest of the three men and the seizure by customs officials of 48 skins and two automobiles used in transporting them. It was learned that one of the men had been bringing Canadian fox furs into New York for several years.

Writ Denied by Supreme Court.--Requests for writs of certiorari were denied by the U. S. Supreme Court on January 31 in the two cases in which the conviction of two Chicago hunters for hunting waterfowl by means of bait had been upheld last October by the Federal Circuit Court of Appeals for the Seventh District. The court sustained the right of the Secretary of Agriculture to adopt regulations not permitting migratory game birds to be taken by means of feed.

Duck Trapper Arrested.--A duck trapper apprehended in Accomac County, Va., on January 14, with seven ducks in possession, was arraigned before a Federal Commissioner at Norfolk, Va., the following day, and bond was fixed at \$250. Three ducks were alive and were later liberated,

Four Jailed for Assaulting Officer.--A Federal deputy game warden on patrol duty with a State investigator in Mason County, Ill., on November 21, found three persons unlawfully hunting migratory waterfowl and seized their guns and ducks. Later in the same day the three hunters and another man demanded their guns and ducks from the officers, saying that they intended to take them. While one of the hunters trained his shotgun with hammer in cocked position on the officers, the other three men, although meeting with resistance, obtained possession of the seizures. With the assistance of the county sheriff and deputies the four men were taken into custody the same day and placed in jail. At a hearing before the United States commissioner on November 24, the bond of one defendant was fixed at \$10,000 and the others at \$10,500 each. Unable to furnish bond the hunters were remanded to jail and their cases set for trial at the April term of Federal Court.

Federal Grand Jury to Investigate.--Evidence is to be presented soon to a Federal grand jury in Minnesota in connection with a case in which three men are alleged to have interfered with a Federal deputy game warden's official performance of duty on November 6. The deputy, it was said, was threatened with assault after he had seized 18 ducks and locked

them in his automobile. The men had attempted to sell the ducks and had tried to enter the car and regain possession of the seized birds.

Night Club Operator Held.--A proprietor of a night club was arraigned before a United States commissioner at Forth Worth, Tex., on November 10, on a charge of purchasing wild ducks and mourning doves. A total of 143 wild ducks and parts of cooked ducks and doves were seized at the club. The defendant pleaded not guilty and was held on a \$2,000 bond. Three other persons, charged with killing ducks in closed season and selling ducks, were arraigned before the same commissioner on November 12, and furnished bond of \$200 each for appearance in Federal court.

Exceeded Bag Limit.--Two persons transporting 91 dead wild ducks in an automobile were arrested in San Francisco, Calif., on December 10, by officers of the California Division of Fish and Game and taken before a United States commissioner. They are being held for action by the Federal court.

Ate Doves During Close Season.--Eight guests at a dove dinner party held in August in Cook County, Tex., were arraigned in a State court on December 27 and fined \$25 and costs of \$12 each for possessing doves out of season. A game management agent learned of the pre-season violation in December, and with the aid of Texas wardens brought the members of the dinner party into court.

Exceeded Dove Bag Limit.--A \$50 fine and a 6 months suspended jail sentence were imposed upon a man on January 3, when he pleaded guilty in Federal court at Opelousas, La., to exceeding the dove bag limit and admitted possessing 35 mourning doves, which were found in cold storage on December 23.

Three men apprehended near Basile, La., on September 19, while hunting doves from an automobile, are scheduled to appear in Federal Court at an early date.

Louisiana Violators Punished.--A hunter charged with possessing 19 blue geese at Abbeville, La., on December 9, pleaded guilty upon arraignment in Federal court at Opelousas, La., on January 3, and was fined \$25.

Three men who hunted ducks prior to 7 a.m. at Catahoula Lake, La., on December 3, were, four days later, fined \$15 each in Federal court at Alexandria, La. All three pleaded guilty.

Two persons arraigned in Federal court at New Orleans, La., on December 9, on charges of killing coots in close season, pleaded guilty and were each given 30-day jail sentences.

A hunter charged with hunting ducks in close season was given a suspended sentence on November 3, in Federal court at Shreveport, La., after having spent 16 days in jail upon being unable to furnish bond.

Two men apprehended at Hackberry, La., on December 5, with 77 ducks in their possession were arraigned before a Federal commissioner and required to furnish bond for appearance in Federal court. A charge of exceeding the bag limit also has been filed against another hunter found in possession of 20 ducks the same day in Cameron Parish, La.

Fined by Federal Court.--Eighteen Migratory Bird Treaty Act cases and one migratory bird-hunting stamp case were terminated in Federal court at Alexandria, La., on January 24. All defendants pleaded guilty. A \$15 fine was imposed in the stamp case, and fines in the other cases were as follows: 2 of \$10 each; 5 of \$15 each, and 11 of \$25 each. A suspended sentence of 60 days was also added in one of the latter cases. Twelve cases pertained to hunting before 7 a.m., two hunting with unplugged guns, three hunting in close season, and one possession of an egret.

Hunted Out of Season.--A hunter arrested on December 31, at Yuma, Ariz., after killing eight doves and a duck, pleaded guilty the same day in State court. He was fined \$100, and his gun was confiscated.

Hunted After 4 P. M.--Five persons apprehended while hunting waterfowl in ricefields in Prairie County, Ark., after 4 p.m. on December 14, pleaded guilty upon arraignment in Federal court on December 28. Two of the men were fined \$10 each, and the others \$5 each.

Used Live Decoys.--Suspended jail sentences of six months each were given three persons arrested on December 2 when they pleaded guilty in an Arkansas State court on December 3, to charges of taking wild ducks by means of live decoys.

Refuge Trapper Arrested.--A trapper living on the White River Migratory Waterfowl Refuge, Ark., was arrested on November 3, on charge of unlawfully trapping raccoons. He was arraigned in Federal court on November 17, and upon pleading guilty was placed on probation 2 years and ordered to move from the refuge.

Possessed 35 Redheads.--A resident of Fair Haven, Mich., found with 35 redhead ducks in his possession on October 24, was arraigned before the United States commissioner at Detroit on October 25. He pleaded guilty and furnished bond for \$500.

Night Hunters Caught.--A county game protector working near Hertford, N. C., on December 11, apprehended two gunners, one a tugboat captain of North Carolina and the other a policeman from Virginia. The charge was taking two wild geese and two ducks at 11 p.m. After the game protector had conferred with an agent of the Bureau, the men were arraigned before a Federal commissioner on December 13. They pleaded guilty and were held for trial under bond of \$200 each.

Duck Baiter Held.--A person charged with attempting to take wild ducks by means of bait and traps was arraigned before a Federal commissioner at Salisbury, Md., on November 26, and held for action by the Federal court. He was released upon furnishing \$500 bond.

Arraign Potomac Motorboat Gunners.--Three persons charged with hunting wild ducks from a motorboat and hunting after 4 p.m., in Gunton Cove, Va., on December 11, were arraigned before a Federal commissioner at Alexandria, Va., on December 14, and required to furnish bond of \$250 each for appearance in Federal court.

Goose Trapping Brings Fine.--Apprehended on November 15, in Sussex County, Del., while trapping wild geese, a hunter was arraigned in State court and fined \$50 and costs of \$2.50.

Draws Stiff Fine.--A hunter arrested in Skagit County, Wash., on November 7, on a charge of shooting at waterfowl before 7 a.m., was taken into a State court the same day. He was fined \$100 and costs of \$2, his shotgun was confiscated, and his hunting and fishing license was revoked.

Another hunter, also apprehended in Skagit County on November 7, by Federal agents, on charges of hunting ducks with live decoys and using a gun holding more than three shells, appeared in a State court on November 19 and was fined \$110 and costs of \$4.

Possessed Yellowlegs.--A hunter apprehended by Federal and State game authorities on November 7, near Whitney Station, Wash., with four greater yellowlegs was taken into a State court and fined \$100 and costs.

Used Parts of Duck to Bait Trap.--Unable to pay a fine for possessing parts of a bufflehead duck that he used in baiting fur-animal traps, a trapper was given a 6-day jail sentence by a State court at Shelton, Wash., on January 7. He was arraigned on the day he was arrested.

Fined by State Court.--Two persons charged with hunting waterfowl after 4 p.m. near Mount Vernon, Wash., and three others charged with hunting before 7 a.m. near La Conner, Wash., were prosecuted in a State court during November. The former were fined \$25 each and costs; the latter, \$100 each and costs.

Four Fined \$100 Each.--Among the cases favorably concluded in an Illinois State court in November were four involving members of a duck club in Mason County, who pleaded guilty to charges of exceeding the bag limit for ducks and were fined \$100 and assessed court costs of \$7 each.

Excess Bag of Ducks.--In Brazoria County, Tex., on December 11, 20 ducks were found in the possession of a hunter, who is to be arraigned in Federal Court in the near future. Another hunter in the county, who killed 58 pintail ducks on October 18, pleaded guilty in Federal Court at Galveston, Tex., on January 18 and was fined \$100. The ducks were seized upon his arrest by a State warden.

Close-Season Hunter Fined.--On November 26, two agents found a tug-boat captain hunting wild ducks from a motorboat in Refugio County, Tex. The hunter pleaded guilty in a State court the same day and paid a fine of \$100 and costs of \$11.

Handlers of Beaver Skins Fined.--A defendant charged with receiving beaver skins illegally transported from Colorado pleaded guilty on December 30, in Federal court at St. Louis, Mo., and was fined \$300. Another defendant charged with transporting skins was fined \$100 and a third person who tried to arrange a sale for the skins was fined \$50 with the same court on January 5. The 50 seized skins were ordered disposed of by the Court.

Exceeded Goose Bag Limit.--Two hunters charged with killing wild geese in Siskiyou County, Calif., in excess of the bag limit were placed on probation for 6 months when tried in a Federal court at Sacramento on November 9.

A hunter, who appeared in the same court on December 14, pleaded guilty to a charge of killing mourning doves before 7 a.m. and was fined \$50. Another dove hunter charged with the same offense on September 5, in San Joaquin County, was arraigned in the Sacramento court on December 14. He pleaded guilty and was also fined \$50.

Trespassed on Refuge.--Four persons charged with hunting wild birds during November 1936, on the Tule Lake Refuge in California, pleaded guilty when arraigned in Federal court at Sacramento on November 9. One was fined \$20 and the others placed on probation for 6 months.

Possessed Head of Mountain Sheep.--On January 2, an agent and two State wardens found a head of a mountain sheep in a cold storage plant at Yuma, Ariz. Prosecution for illegal possession was instituted in a State court and the case closed on January 8, with a fine of \$100.

Cafe Operator Fined.--A cafe operator at Portland, Oreg., was fined \$50 when arraigned in a State court on December 21, on a charge of selling and serving wild ducks.

Imported Ducks.--A person whom a jury had previously found not guilty of possessing wild ducks contrary to the Migratory Bird Treaty Act was found guilty in the Federal court at Los Angeles, Calif., on December 6, of importing ducks contrary to the Tariff Act and fined \$50.

Fined for Buying Ducks.--A hunter upon pleading guilty to a charge of purchasing wild ducks was fined \$100 and costs of \$22 in a State court at Fort Worth, Tex., on November 15.

Indicted for Lacey Act Violation.--An indictment was returned by the grand jury in Federal court for the District of Nevada at the October term charging four persons with conspiracy to violate the Lacey Act. The offenses involved unlawful transportation of 362 beaver pelts from Idaho to Nevada by automobile and unlawful shipment of the pelts from there to New York City.

Exceeded Dove Bag Limit.--A dove hunter arrested January 14, in Montgomery County, Ala., on a charge of killing wild doves in excess of the daily bag limit and with an automatic shotgun not properly plugged, was arraigned in Federal court the same day and upon a plea of guilty was fined \$20.

Two Hunters Fined \$50 Each.--Two hunters charged with hunting doves with unplugged guns were fined \$50 each and costs upon being arraigned on January 11, in Federal court at Lexington, Ky.

Killed Quail on Refuge.--Two hunters, who killed quail on the Boulder Canyon Wildlife Refuge, Nev., on October 20, pleaded guilty and were fined \$11 each on December 7, by the Federal court at Las Vegas, Nev.

Receive Stiff Fines.--Two hunters were fined \$100 and \$200 respectively, on February 19, by the Federal court at Los Angeles, Calif., for killing and possessing a wild duck in close season and killing four Hudsonian curlews, and each hunter was placed on probation for 2 years and ordered not to hunt during that period.

Bag Limit Cases.--Three men arrested at Port O'Connor, Tex., on November 28, with 40 ducks in their possession were taken before a Federal commissioner and required to furnish bond of \$500 each for appearance later in Federal court.

Used Bait.--Ten cases against persons charged with hunting wild ducks by means of bait in Calhoun County, Ill., on November 1, were disposed of January 12, in the Federal court at Springfield, Ill. The defendants pleaded guilty and were fined \$100 and \$35 costs each.

Two Hunters Jailed.--Fines of \$100 and \$200, respectively, and costs were imposed by an Illinois State court upon two hunters on January 21, for killing 50 wild ducks the day before in Mason County, Ill. Unable to pay the fines and court costs the two were committed to jail. Evidence that they had killed the ducks was obtained by Federal deputies.

Four Draw \$10 Fines.--Four persons who possessed a total of 15 ruddy ducks and a canvasback on November 27, pleaded guilty in Federal court for the Southern District of California on January 31, and were fined \$10 each. Two other cases tried in the same court during January resulted in fines of \$10 and \$15.

Killed Blackbirds.--A hunter who had been arrested by a Federal deputy game warden on October 30, in Burlington County, N. J., for killing 25 red-winged blackbirds. His case is pending in court.

Speared Muskrats on Refuge.--A person charged with spearing muskrats on the Upper Mississippi River Wildlife and Fish Refuge was sentenced to 30 days in jail on January 26 by the Federal court at Winona, Minn. The defendant, who was arrested on December 17, already had been confined in a jail about a month in default of bond.

Had 54 Ducks.--On December 15, Federal agents assisted by a State game warden arrested two hunters in Jefferson County, Tex., in possession of 54 freshly killed wild ducks. They were tried separately by juries in a State court and each was fined \$50 and costs of \$18.75.

Trappers Fined.--Three men found spearing muskrats at night in Buffalo County, Wis., on December 16, were arraigned in State court the following day and fined \$150 each and costs. Another trapper charged with the same offense was fined \$50.

Four Deer Hunters Fined.--Four men paid fines in State courts totaling \$300 and costs of \$81.90 for hunting deer at night and killing a doe on January 1 on a State game refuge in New Mexico and transporting it to Texas.

Alaska Game Law Administration

Value of Fur Shipment Increases.--Recent figures compiled by the Alaska Game Commission show that furs valued at \$2,285,710 were shipped from Alaska during the past year--an increase of \$379,971 over 1936, brought about largely as a result of an open season on marten, skins totaling 16,969 having been taken at a value of \$27.35 each.

Report on Violations.--Violations reported during the quarter ended December 31, totaled 81, of which 16 involved aliens. Total fines amounted to \$3,143 and jail sentences imposed totaled 580 days. The wardens seized 25 firearms, 75 pelts, and 22 game animals, having an estimated value of \$1,032, bringing the total for fines and seizures for the quarter to \$4,175.

Jewell Returns to Alaska.--Game Warden Homer W. Jewell, who was stationed at Seattle, Wash., during the past year, has returned to Juneau to become the assistant executive officer of the Alaska Game Commission. At Seattle, Warden Jewell cooperated with other game management agents in the Pacific Coast States in checking violations of fur laws. Many boats were searched, fur-dealing and taxidermist establishments checked, and cases involving smuggled contraband furs and game investigated. As a result of these activities many furs, including completed fur coats and collar pieces and mounted bear skin rugs, were seized.

Drifts on High Sea.--Warden Carson, of district 9, recently drifted several hours on a high sea when the engine in his scout boat, Red Fox, failed him during a storm. By using his sleeping bag and a pike pole for a sail he managed to reach shore at 3 a. m.

Warden Carson spent the first two months of the fall in routine patrol work and making preparations for the winter. A non-resident whom he arrested for illegally taking moose pleaded guilty and was fined \$25. A native trapper from whom he seized 17 beaver skins claimed that it was necessary to take the animals for food.

Make Winter Patrol.--Warden Gallwas, in charge of district 5, returned to Seward, December 25, from a long winter patrol that he and Deputy Warden Benson made on Kodiak Island and the Alaska Peninsula. Before starting this trip on October 15, Warden Gallwas apprehended a hunter taking goats without a license and an alien without a license. The goat hunter was fined \$60; the alien, \$200, and his gun was forfeited.

Investigates Alien Cases.--During his special assignment to district 4, Warden Gray completed the investigation of three cases involving possession of firearms by aliens and one case of a hunter taking a female deer. Otto Koppen, of Cordova, who is employed by the Bureau of Fisheries during the summer, has been appointed a part-time deputy warden. The commission had received numerous requests for a warden in that section. A regular warden will probably be placed at Cordova this spring to supervise beaver sealing and to investigate alien cases.

Selfridge Apprehends Illegal Trappers.--Patrolling the hunting grounds in district 3 kept Warden Selfridge busy during the first part of the last quarter of 1937. Several cases involving violations of deer and migratory bird regulations were investigated and prosecuted. One person arrested by Captain Clare Krogh, a deputy warden, on a charge of illegal possession of deer, was also punished in court.

During December Warden Selfridge and Warden Rhode made an extensive preseason trapping patrol in the district and arrested more than a dozen trappers, many of whom received heavy fines and jail sentences.

Returns to Juneau.--Warden Gray returned to his headquarters at Juneau after a busy summer patrol in the Aleutian Islands, Bristol Bay,

and Cordova districts. He apprehended two aliens upon his return to Juneau and made several short patrol trips to nearby islands during the deer season. During the first three weeks in December, he and Warden Sarber made a preseason trapping patrol in districts 1 and 2.

Patrol District 2.--Warden Hosea Sarber and Deputy Warden Howard Jensen, of district 2, were busy during the fall with routine patrolling. Several cases involving illegal taking of deer were investigated and prosecuted. One alien was apprehended and his guns seized. While Warden Sarber assisted Warden Gray on the patrol boat Seal, Warden Jensen handled the work in district 2.

Violators Fined.--Warden Collins, of district 14, has made good progress in stamping out an alleged ring of illegal beaver handlers in the vicinity of Kotzebue. Ten beavers were recently seized from one man and two other violators were successfully prosecuted. One was fined \$500 and the other \$48.

Assists Other Wardens.--During recent months Warden Jack O'Connor, of district 9, spent much time assisting wardens in other districts. He was in the Seward-Kenai district during Warden Gallwas's absence, and later flew to McGrath to check Warden Tibbs's property and attend to other matters for the executive office. A trapper whom he arrested in Matanuska Valley on a charge of taking coyotes without a permit was fined \$25. The trapper also forfeited 5 coyote skins and 3 leg bones, which were necessary for bounty claims. A preseason trapper in the Anchorage district was fined \$25 and forfeited 10 traps.

Apprehends Aliens.--Three aliens were apprehended by Warden White, of district 11, during the last quarter of 1937, and three cases involving minor violations were disposed of. A five-place airplane that has been made available to Warden White will be used in law-enforcement work in several districts.

Supervises Taking of Caribou and Moose.--Warden McMullen, of district 10, supervised the taking of caribou and moose this season for the natives' winter meat supply and has been patrolling trapping areas. He reports an alarming shortage of caribou but good prospects for the fur harvest this season. In recent months he also has helped natives settle their controversies over trapping areas.

Personnel Changes.--Warden Tibbs, in charge of district 7, resigned December 1. Warden Clarence Rhode, who had been assigned temporarily to the Juneau administrative office as acting assistant executive officer, has been given a field assignment. Norman J. Benson, of Seward, who was appointed deputy game warden on October 1, was temporarily assigned to assist Warden Harold Gallwas in making a winter patrol of the Alaska Peninsula. Otto Koppen was appointed a part-time deputy game warden to represent the Commission in the Cordova district until a full-time warden can be appointed.

PREDATOR AND RODENT CONTROL

Mouse Control Effective.--Reports from field workers in New England indicate that a large majority of commercial orchardists have been given specific demonstrations in orchard-mouse control and that almost 100 percent control has been obtained by those who closely followed the directions. Fruit growers throughout New England appear much interested in the control project and are cooperating with the Bureau workers in putting the field practices into operation. District Agent Ernest M. Mills, of Amherst, Mass., reports that 1,786 persons attended the 137 demonstrations given the past three months by the three new field agents. Cooperative funds of \$5,424.98 have been made available for the work.

Capture Sheep-killing Bear.--The Wyoming district office reports that a bear that had been raiding a flock of purebred rams on a ranch at the foot of the Shoshone Mountain north of Cody was recently trapped by Hunter Byron Brewster, of Meeteetse, Wyo. On one of its visits the bear killed 24 young rams valued at \$25 each. While the bear was being skinned, discovery of two 250-3,000 bullets lodged next to the skin offered almost certain proof that it was the same animal that escaped capture at the ranch one night 2 years before, when Hunter Brewster and a ranch hand placed bait in the center of the corral and then climbed on a shed roof about 20 yards away, Brewster with his 250-3,000 rifle ready and the ranch hand with his flashlight. The bear appeared but instead of going to the bait went into the shed after an old sheep. When the flashlight failed to work both men jumped off the roof and at the same time the bear came bounding out of the shed between them. Brewster fired and heard the bear groan as he bounced off the fence and then headed for the opposite side of the corral. He fired again, but the bear escaped, although a trail of blood found the next morning indicated that it had been hit.

Vote \$5,000 for Cooperative Control Work.--Woolgrowers of the San Juan basin in Colorado voted approximately \$5,000 for cooperative predator control work at their meeting on November 12, reports District Agent W.E. Riter. This will permit the employment of more hunters in this area, where losses from predators have been heavy in recent years.

State Law Aids Rodent Control.--District Agent Riter reports that much interest is being shown in rodent control in various counties throughout Colorado as a result of law, passed by the last session of the State legislature, that makes it possible for several counties to provide more adequate finances for pest control. Mr. Riter estimates that the new law will make at least \$50,000 available for control operations this summer.

Bounty Offer Fails.--The ineffectiveness of the bounty system under certain conditions is shown in the following report received from the Texas district: "A hunter working in Scurry County caught a coyote that had both ears notched and its tail bobbed. He learned that the

animal had been roped and marked by a rancher in Borden County eight years ago and turned loose "just to see how fast a coyote could run." Although the coyote disappeared quickly it returned so frequently thereafter to prey upon livestock and poultry, "that the rancher put a \$25 bounty on its head. This went unclaimed."

Traps Large Coyote.--The trapping by Hunter Louis Hale, of the Wyoming district, of a male coyote weighing 74 3/4 pounds and measuring 63 inches from tip to tip was recently reported. As far as is known this is the largest coyote ever taken by a Bureau trapper. It is planned to use the skeletal remains and pelt in mammal studies.

Protect Wild Turkeys.--District Agent E. M. Mercer, of the Arizona district, reports that during December arrangements were made for employing two trappers in cooperation with the State Game Department. One man began work January 1 in the Santa Catalina Mountains near Tucson to control predators on an area where 200 wild turkeys are to be released during the spring, and the other trapper is working on the upper Black River area. As thousands of turkeys migrate into that locality during the winter, efforts are being made to reduce the heavy annual loss from predators.

Control Work in Texas Helps Turkey Raisers.--District Agent C. R. Landon, of the Texas district, reports that turkey raisers in Texas have benefited greatly from predator-control operations and that the annual increase in income from turkeys in McCulloch County alone amounts to more than the entire cost of control work in the State. In 1914, before control work was begun in that County, the annual income from the turkey industry was less than \$5,000. During the past several years, however, wolves have been put under control and the annual business in the county has increased from \$200,000 to \$300,000. There also has been a corresponding increase in the income from sheep and goats.

Captures Migrating Wolves.--Hunter William C. Echols, of New Mexico, has trapped four of the six wolves that migrated during December and January from Mexico to cattle ranges in Hidalgo County, N. Mex. Four head of cattle on one range and two on another were killed by wolves. Hunter Echols hopes to trap the other two before they move back into Mexico.

Appropriate Funds for Control Work.--District Agent Adolph S. Hamm, of the Wyoming district, reports that county appropriations for predator control in Wyoming are being renewed for 1938. The following counties already have made appropriations: Campbell, Crook, Sheridan, Johnson, Hot Springs, Park, Natrona, Niobrara, Platte, Boshen, Carbon, Lincoln, and Albany. Sweetwater, Weston, and Big Horn Counties very likely will also contribute to this program. In addition, many livestock associations in Wyoming also offer financial assistance.

Punished for Stealing Traps.--District Agent Roy Fugate, of the Oregon district, reports that three persons involved in taking or removing traps were recently fined or sentenced to jail. One of the defendants was fined \$25 and costs of \$4.50 for having traps in his possession that were assigned to a Federal hunter in Wallowa County, Oreg. Another was fined \$10 and costs of \$2.50 and sentenced to 20 days in jail for removing and destroying Government traps near Heppner, Oreg. A third person arrested on a State game refuge and having government traps in his possession was fined \$50 and \$2.50 costs. Unable to pay the fine he was sentenced to jail to serve out the sentence at the rate of \$2 daily.

Cooperative Control-Work Authorized.--A hunter will be assigned soon to cooperate with Mississippi officials in the control of wolves and coyotes, which are reported in the southern part of the State. A law recently enacted by the State legislature authorizes the State Game and Fish Commission to cooperate with the Bureau in control work. Cooperative projects have not been undertaken in this State before.

Detailed to Washington.--Paul T. Quick, in charge of the Bureau's supply depot at Pocatello, Idaho, was in Washington, D. C., from December 23, to March 11, perfecting plans for increasing the efficiency of operations at the supply depot.

Investigates Rabies Outbreak.--District Agent John C. Gatlin, of New Mexico, reports an outbreak of rabies among dogs on the Navajo Indian Reservation. In conferring with officials of the Indian agency at Window Rock, Ariz., and the county extension agent at Aztec, N. Mex., he learned that the agency and State health authorities are actively engaged in bringing the outbreak under control and that it has not spread to coyotes.

Jack Rabbits Used as Food on Fox Farms.--District Agent W. E. Riter, of Colorado, reports that a private company is supplying the Rocky Mountain Fur Growers Association 300 tons of jack rabbit meat this season for feeding foxes. Last year the fur farmers used 50 tons. Previous attempts to utilize the rabbit meat failed, largely because it was poorly prepared and the supply limited. Farmers in Colorado and Kansas supply the rabbits to the private company, receiving 6 cents each, f.o.b, for whole animals, or 7 cents when delivered in Denver. The rabbits are collected from November 15 to about March 1 and after being skinned and dressed are put into cold storage. The company has been able to market about 100,000 pounds of rabbits skins, also paying the farmers 5 cents per skin.

CONSTRUCTION AND C.C.C. OPERATIONS

Visits Midwest Refuges.--P.S.M. Pedersen made a field inspection trip during November to several Midwest refuges. He spent two days at the White River Migratory Waterfowl Refuge, Ark., where he inspected the headquarters building being constructed at the St. Charles site and the

three C.C.C. camps. His next stop was at the Swan Lake Migratory Waterfowl Refuge, Mo., where he inspected the new camp that had just arrived. The Squaw Creek Refuge, Mo., was also visited. Mr. Pedersen spent a day each in the regional offices at Omaha, Nebr., and Des Moines, Iowa, before going to the Chautauqua Migratory Waterfowl Refuge, Ill., where he viewed the proposed headquarters site and discussed the building program with the refuge manager.

Ruby Lake Survey Nears Completion.---L. M. Winsor, district engineer in charge of the engineering development of the western refuges, reports that rapid progress is being made in the topographic survey of the Ruby Lake Migratory Waterfowl Refuge, Nev., and that it will shortly be completed. He reports that seven antelope and hundreds of Canada geese and mallards were observed on the area December 4 and 5.

Moose Seen on Mud Lake Refuge.---Joe M. Madsen, superintendent of the C.C.C. Camp on the Mud Lake Migratory Waterfowl Refuge, Minn., has reported the discovery of a pair of moose living in a dense spruce-tamarac swamp on the northwest side of this refuge. These animals are rare in this section of Minnesota, although they are present in some numbers 40 or 50 miles east of the Mud Lake Area.

Improve Boulder Canyon Refuge.---Under a cooperative arrangement with the National Park Service, a detail of 25 enrollees from the Park Service Camp S-1 is working on the construction of dikes on the Boulder Canyon Wildlife Refuge near Moapa, Nev. The Park Service is furnishing the enrollees and the supervision, and the Biological Survey, certain equipment and funds. The plans call for the construction of three dikes that will provide shallow pond areas for the production of waterfowl foods.

Activities of Des Lacs Camp Publicized.---The January 1 issue of Happy Days, the weekly newspaper of the C.C.C., carried a two-page article on the activities of Camp BF-1, on the Des Lacs Migratory Waterfowl Refuge, N. Dak., explaining the education and instruction of enrollees. Boys from this camp have obtained positions as truck drivers, blacksmiths, mechanics, radio operators, salesmen, and clerks, and feel that their camp training is largely responsible for their success in obtaining work. On January 1, the Des Lacs camp had a record of 259 days without an accident.

Improve Antelope Refuge Roads.---Approximately 25 miles of roads in the Hart Mountain Antelope Refuge, Oreg., have been improved or rebuilt in recent months, and 4 miles of travel ways have been built through rocky stretches to avoid snow drifts. Quarters for C.C.C. Camp BF-4, which is to begin improving the refuge soon, are practically completed.

Visits Montezuma Refuge.---R. O. Gustafson, administrative assistant, spent a day early in December at the Montezuma Migratory Bird Refuge, N. Y., in obtaining the transfer to the C.C.C. camp of some much-needed equipment for dirt-moving projects, including three stake trucks, one pick-up truck, a 90-class and a 40-class tractor, and a grader.

Assist in Flood Control Work.--Henry S. Gierlich, superintendent of the C.C.C. Camp at the Sacramento Migratory Waterfowl Refuge, Calif., reports that a detail of enrollees, accompanied by foremen and leaders, assisted in flood control work on the Sacramento River during its recent overflow that flooded many communities and did considerable damage.

Appointed C.C.C. Field Inspector.--O. W. Teckemeyer, formerly chief foreman at the Swan Lake C.C.C. Camp, Mo., has been made a field inspector. All of the camps in Region 4 (West Central) the three White River camps in Arkansas, and the camp on the Seney Refuge in Michigan, are in his territory. Clarence H. Wilson has replaced Mr. Teckemeyer as chief foreman of the Swan Lake camp.

Headquarters Construction Nears Completion.--Wilfred J. Gregson, C.C.C. field inspector, reports that the new headquarters buildings at the Red Rock Lakes Migratory Waterfowl Refuge, Mont., are practically completed. Log construction has been used throughout.

Camp Has Good Safety Record.--Valentine Camp BF-2, located on the Valentine Migratory Waterfowl Refuge, Nebr., has operated for a year since January 27, 1937, without a single lost-time accident.

C.C.C. Activities on Blackwater Commended.--The February 12 issue of Happy Days, a weekly newspaper for the C.C.C., cites operations on the Blackwater Migratory Bird Refuge, near Cambridge, and work accomplished on the Beltsville Research Center as the two most valuable contributions made by the C.C.C. in Maryland in 1937. The work done by an average of 30 companies in the State during the year also was highly commended.

In Washington.--Brice McBride, hydraulic engineer, whose official station is Salt Lake City, Utah, arrived in Washington January 20 to check up on the water rights and water problems of some of the migratory waterfowl refuges and to confer with officials of the U. S. Geological Survey about the establishment of cooperative stream-gauging stations on the principal refuges. He also conferred with Bureau officials on the water problems.

Capt. M.N. Egoroff, senior engineer in charge of beach erosion control on the Bull Island unit of the Cape Romain Migratory Bird Refuge, S. C., spent several days in the Washington Office the week of January 17 and planned to spend some time at the Pea Island Refuge, N.C.

THE SURVEY

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GENERAL NOTES

Explains Federal State Aid Act.--On April 22, Dr. Gabrielson spoke before the annual convention of the Izaak Walton League at Chicago, Ill., on the act that provides Federal aid for State wildlife-restoration programs. He also addressed a luncheon meeting of the Chicago Conservation Council held on April 21. The Chief was accompanied by Stanley P. Young, chief of the Predator and Rodent Control Division, who after attending the convention left for Ann Arbor, Mich., to talk before the forestry school of the University of Michigan.

Participates in Radio Dialogue.--Dr. Gabrielson and Arno B. Cammerer, Director of the National Park Service, participated in a radio dialogue, "All for Wildlife," on March 23, broadcast on the National Farm and Home Hour in connection with the observance of National Wildlife Restoration Week. Both pointed out that any public agency or private individual that had land to administer must either conserve wildlife or pass up an important natural resource. Also, that successful wildlife conservation on national parks and Federal refuges depends on close cooperation between the agencies that administer these areas. Mr. Cammerer and Dr. Gabrielson then cited the cooperation of the National Park Service and the Biological Survey that is helping to conserve and restore the trumpeter swan, the whistling swan, and elk, as all three are exemplary of wildlife that use areas of both agencies.

On the same day, addressing the Falls Church, Va., chapter of the Izaak Walton League at a banquet held at Alexandria, Va., Dr. Gabrielson pointed out that the observance of the National Wildlife Restoration Week should lead to a keener appreciation of the value of natural resources.

"It should also result," he said, "in a thoughtful and intelligent resolution to preserve what we have, restore some of what we have lost, and use all our resources more wisely in the future than we have in the past." He explained that any community can have more wild birds and animals, provided it is willing to give wildlife proper care and attention and see that proper food and cover are provided. His address was broadcast over Station WMAL, Washington, D. C.

On March 20, the Chief gave a radio talk on "Waterfowl Nesting Ground Surveys" at Washington over the Mutual Broadcasting System, and on the following day he addressed the Bridgeport, Conn., Chamber of Commerce. The talk at Bridgeport was also broadcast.

Attend Conference of Game Commissioners.--On March 14 and 15, Chief Gabrielson, in company with Frederick C. Lincoln, W. E. Crouch, F. P. Callaghan, and A. M. Day, attended a conference of game and fish commissioners of several southern States, at Jacksonville, Fla. Law enforcement

and the act of Congress providing Federal aid to States in wildlife restoration programs were discussed. Commissioner I. T. Quinn, of the Alabama Department of Conservation of Game, Fish, and Seafoods, presided. Frank T. Bell, of the Bureau of Fisheries, gave a short talk on the cooperative work of his Bureau with various States, which was followed by a talk by Dr. Higgins of the same Bureau on the work of that agency's Division of Scientific Inquiry. Dr. Gabrielson reviewed the purposes of conferences with game officials and thanked them for their cooperation. Mr. Lincoln read extracts from a paper prepared two years ago on the mourning dove and then summarized the information the Bureau has obtained more recently on the status of this bird, particularly in Mississippi and Tennessee. Dr. A. M. Pearson, leader of the Alabama Cooperative Research Unit, also spoke on the mourning dove. Dove-hunting season for the Southeastern States were tentatively agreed upon.

Makes Field Trip.--Late in February and early in March, Dr. Gabrielson was on a field trip in the West, stopping at Omaha, Nebr., Pierre and Yankton, S. Dak., and Sioux City, Iowa. At Pierre, he attended the fifth annual school and conference of the South Dakota Department of Game and Fish and spoke on "Waterfowl Rehabilitation," and at Yankton he gave a radio talk on waterfowl from Station WNAX under the auspices of the local chapter of the Izaak Walton League. He also spoke at Sioux City at a noon luncheon on March 5, sponsored by the local Izaak Walton League Chapter.

Addresses Church Brotherhood.--On April 19, Dr. Gabrielson addressed the Brotherhood of the Presbyterian Church of Takoma Park, Md., on "Conservation of Wildlife" and showed two Bureau motion pictures, "The How and Why of Bird Banding" and "Why Save the Elk?"

Speaks on Wildlife at Boston.--Associate Chief Henderson explained the Bureau's wildlife restoration activities at a well-attended supper meeting held on March 23, at Boston, Mass., by members of the National Wildlife Federation in observance of National Wildlife Restoration Week. Many persons not connected with sportsmen's organizations were present, indicating a widespread interest in the welfare of wildlife.

Inspects Mouse Control Projects.--On April 13, Mr. Henderson visited the Blackwater Migratory Bird Refuge, Md., and the Bombay Hook Migratory Waterfowl Refuge, Del. From Dover, Del., he proceeded to New Haven, Conn., Springfield, Mass., Portland, Maine, and other points in Region 8, inspecting the Bureau's orchard mouse control projects and discussing the work with Regional Director Bertrand E. Smith. He completed his trip on April 23.

Veteran Conservationist Dies.--Dr. George Bird Grinnell, 88 years of age, naturalist and explorer and one of the original members of the Migratory Bird Treaty Act Advisory Board, died April 11, at his home in New York City. He was named a member of the board on July 1, 1917, which was formed after the Migratory Bird Treaty was effected and continued after the passage of the Treaty Act in 1918. He resigned his position at the end of 1931. Dr. Grinnell often was called "the father of American conservation"

and was the author of numerous books about American Indians and wildlife. He founded the Audubon Society in 1886 and in conjunction with Theodore Roosevelt the Boone and Crockett Club in 1887. He first attracted scientific interest in 1875 on his return after a survey trip to Yellowstone Park. He reported on the mammals and birds in that region and protested against the destruction by unscrupulous hunters of buffalo, elk, mule deer, and antelope.

He was naturalist on Custer's expedition to Black Hills, 1874; on Ludlow's reconnaissance to Yellowstone Park, 1875; explorer and collector of fossils in the plains and Rocky Mountains for the Peabody Museum, of Yale University, 1875-95; commissioner for the sale of the lands of Blackfeet and Ft. Belknap Indians, 1895, and a member of the Harriman expedition, to Alaska, 1899. Doctor Grinnell was a fellow of the Ornithologists' Union from the year of its organization in 1833, and vice-president about 1924-25. He was editor of Forest and Stream, 1876-1911, a journal which in its earlier years especially carried contributions of famous naturalists of the country.

Mexican Game Official Visits Bureau.--Senor Juan Zinser, Chief of the Game Section of the Mexican Forestry, Fish, and Game Department, who participated in the North American Wildlife Conference, at Baltimore, Md., was a visitor at the Bureau on February 21. He conferred with Associate Chief Henderson, Dr. Bell, and E. A. Goldman and visited the Bureau's mammal laboratories.

Wildlife Society Names Committees.--Biological Survey members represented among the officers elected at the meeting of The Wildlife Society held in Baltimore, Md., in February, and committeemen named later include: Dr. Walter P. Taylor, regional representative for Region 5, and member of the committee on professional standards; W. L. McAtee, trustee and editor of The Journal of Wildlife Management; Lawrence E. Hicks, membership committee; and Leo K. Couch, chairman of committee on arrangements for the 1939 meeting. Dr. Arthur A. Allen, of Cornell University, was elected president.

Three Bureau Members Retire.--Mrs. Jane S. Elliott, Mrs. Rosa E. J. Koch, and Mrs. Mary P. DeKnight, veteran members of the Bureau, ended their services on March 31, upon reaching the retirement age. Luncheon groups of fellow employes presented Mrs. Elliott a pin, ring, and a set of garnet ear rings; Mrs. DeKnight an amethyst ring and pin; and Mrs. Koch a well-filled leather purse.

Mrs. Elliott, a member of the Section of Wildlife Surveys, has done free-hand drawing, coloring, and lettering on Bureau maps since 1911, and leaves only 8 members in the Bureau who preceded her and have remained in continuous service--E. A. Goldman, Dr. H. C. Oberholser, Arthur H. Howell, E. J. Thompson, W. L. McAtee, F. L. Earnshaw, Dr. H. H. T. Jackson, and E. R. Kalmbach. When Mrs. Elliott joined the Survey, Vernon Bailey, now retired, was in charge of the geographic distribution division and had as his assistants Dr. E. W. Nelson, who later became Chief of the Bureau, E. A. Goldman, E. A. Preble, Dr. Jackson, Mr. Howell, and C. Birdseye.

Mrs. DeKnight, a member of the Accounting Section since 1920, was formerly employed in the War Department and Forest Service. Mrs. Koch was employed by the War Risk Insurance Office, now the Veterans Administration, and the Treasury Department before joining the Bureau's Mail and Files Section in 1924.

Photographs of the three retiring members appeared in Washington newspapers, and on April 1, Mrs. Elliott's reminiscences of her service with the Bureau were published in "The Federal Diary" column of the Washington Post.

ADMINISTRATION

Memoranda to Field Officers Issued.--Following is a list of the memoranda issued in the "Administrative Field Office" (Admin. F. O.) series since the last issue (January-March 1938) of the Survey:

- No. 14. Amendment No. 1. Veterans' retention preference in reduction of force. (February 14.)
- No. 21. Revised. Amendment No. 2. Instructions in solicitation and acceptance of bids. (February 8.)
- No. 40. Amendment No. 1. Form Bi-107 "Field Report - Distribution of Expenditures"--discontinuance of use. (February 14.)
- No. 42. Amendment No. 2. Maintenance of records of travel expenses for use in preparing income tax returns. (February 4.)
- No. 76. Revised. Amendment No. 1. Submission in advance of effective date of recommendations for restoration to pay status of employees on furlough or without-compensation basis. (January 10.)
- No. 89. Revised. Amendment No. 1. Lease bid specifications--lease effective from date of occupancy. (January 29.)
- No. 94. Amendment No. 3. Granting of leave to Bureau field employees (including CCC). (March 15.)
- No. 111. Amendment No. 1. Use of Government communication facilities. (March 11.)
- No. 221. Amendment No. 1. Recording and reporting personal-injury and property-damage accidents. (January 28.)
- No. 221. Amendment No. 2. Recording and reporting personal-injury and property-damage accidents--preparation of Form Bi-1480. (March 9.)
- No. 222. Postage stamps for official use--procurement and accounting. (January 17.)
- No. 223. Expenditures for insurance against loss, damage, or destruction in the shipment of valuables prohibited. (January 24.)
- No. 224. Application of certain provisions of permanent leave regulations to "duration of work" employees. (January 28.)
- No. 225. Holidays for calendar year 1938. (February 10.)
- No. 226. Procurement of retirement forms. (March 9.)
- No. 227. Department form of application for employment. (March 9.)

- No. 228. Policy covering the issuance of permits to vendors and others for the continued occupancy of buildings or the use of lands acquired by the Government. (March 19.)

The following memoranda to field officers have been issued in "Contracts" series:

- No. 14. Amendment No. 1. Blanket clearance for the purchase of special lubricating oils for Diesel-powered equipment until March 31, 1938. (February 5.)
- No. 15. Procurement of repair parts and accessories for motor vehicles, tractors, air compressors, and construction and road-building machinery. (January 13.)
- No. 16. Mandatory contracts for battery cables, tire chains, brake band linings, and clutch facings--January-December 31, 1938. (January 21.)
- No. 17. Refills for carbon tetrachloride fire extinguishers. (January 27.)
- No. 18. Contract covering repair parts for Kohler electric generating sets (to June 30, 1938.) (February 14.)
- No. 19. Contract for service-station deliveries in Northeastern States for gasoline, lubricating oil, anti-freeze, and lubrication service for the period January 1, 1938, to March 31, 1938. (February 17.)
- No. 20. Changes in Procurement Division contracts. (March 7.)
- No. 21. Procurement of gear and bearing lubricants in bulk quantities. (March 24.)
- No. 22. Reporting open-market purchases of cement. (March 30.)
- No. 23. Procurement of tires and tubes for use on Government-owned automobiles during period April 1, to September 30, 1938. (March 30.)

PUBLIC RELATIONS

Addresses West Virginia Wildlife Group.--Col. Sheldon participated in the National Wildlife Restoration Week program of the Mineral County Wildlife Protective Association at Keyser, W. Va., on March 24, by speaking before the group on the national wildlife restoration program.

Broadcasts in Wildlife Week.--On March 21, during the first Farm and Home Hour program in National Wildlife Restoration Week, Howard Zahniser broadcast a talk, "Fifty-Two Wildlife Weeks." "Our wildlife," he said, "is an essential part of our world. If we destroy it, in so doing we can not help but damage ourselves. Conserving wildlife is promoting the best possible world for ourselves. That explains why more and more Americans are becoming conservationists and this week ought to bring in many more converts, the sort of converts, who will see that in every year from now on there are fifty-two wildlife weeks."

Broadcast Series To Begin.--On May 5, Mr. Zahniser was scheduled to begin a weekly series of broadcasts on the National Farm and Home Hour. Various aspects of the Biological Survey's work will be discussed each Thursday at 12 noon Eastern Standard Time, during a program that starts at 11:30 a. m. Eastern Standard Time. Members of the Bureau who hear the broadcasts are requested to send in any suggestions for improvement or any material that they consider valuable for future broadcasts. The Stations broadcasting the talks will be as follows:

WABY, Albany, N. Y.; KOB, Albuquerque, N. Mex.; WSAN, Allentown, Pa.; WGNC, Amarillo, Tex.; WOI, Ames, Iowa.; WWNC, Asheville, N. C.; WSB, Atlanta, Ga.; KERN, Bakersfield, Calif.; WBAL, Baltimore, Md.; WJBO, Baton Rouge, La.; KFIM, Beaumont, Tex.; KGHL, Billings, Mont.; WSGN, Birmingham, Ala.; KFYR, Bismarck, N. Dak.; KIDO, Boise, Idaho; WBZ, Boston, Mass.; WEBR, Buffalo, N. Y.; KGIR, Butte, Mont.; WCSC, Charleston, S. C.; WSOC, Charlotte, N. C.; WMAQ, Chicago, Ill.; WLW, Cincinnati, Ohio; WHK, Cleveland, Ohio; WIS, Columbia, S.C.; WCOL, Columbus, Ohio; KRIS, Corpus Christi, Tex.; KOIL, Council Bluffs, Iowa; WCKY, Covington, Ky.; WFAA, DALLAS, Tex.; KOA, Denver, Colo.; KSO, Des Moines, Iowa; WXYZ, Detroit, Mich; KTSM, El Paso, Tex.; WLEU, Erie, Pa.; WGBF, Evansville, Ind.; WDAY, Fargo, N. Dak.; KMJ, Fresno, Calif.; WFBC, Greenville, S. C.; KTHS, Hot Springs, Ark.; KXYZ, Houston, Tex.; WJDX, Jackson, Miss.; WJAX, Jacksonville, Fla.; WJTN, Jamestown, N. Y.; WREN, Lawrence, Kans.; KARK, Little Rock, Ark.; KECA, Los Angeles, Calif.; WAVE, Louisville, Ky.; WIBA, Madison, Wis.; KMED, Medford, Oreg.; WMC, Memphis, Tenn.; WIOD, Miami, Fla.; WSM, Nashville, Tenn.; WDSU, New Orleans, La.; WJZ, New York, N. Y.; WTAR, Norfolk, Va.; KLO, Ogden, Utah; WKY, Oklahoma City, Okla.; WFIL, Philadelphia, Pa.; KTAR, Phoenix, Ariz.; KOAM, Pittsburg, Kans.; KDKA, Pittsburgh, Pa.; KSEI, Pocatello, Idaho; KEX, Portland, Oreg.; KGHF, Pueblo, Colo.; WPTF, Raleigh, N. C.; WRTD, Richmond, Va.; WHAM, Rochester, N. Y.; KFBK, Sacramento, Calif.; KWK, St. Louis, Mo.; WTCN, St. Paul-Minneapolis, Minn.; WOAI, San Antonio, Tex.; KFSD, San Diego, Calif.; KGO, San Francisco, Calif.; KTMS, Santa Barbara, Calif.; KJR, Seattle, Wash.; KTBX, Shreveport, La.; KSOO, Sioux Falls, S. Dak.; KGA, Spokane, Wash.; WBZA, Springfield, Mass.; KGBX, Springfield, Mo.; KWG, Stockton, Calif.; WEBC, Superior, Wis.; WSYR, Syracuse, N. Y.; WFLA-WSUN, Tampa, Fla.; WBOW, Terre Haute, Ind.; WSPD, Toledo, Ohio.; KVOO, Tulsa, Okla.; WMAL, Washington, D. C.; KRGV, Weslaco, Tex.; KANS, Wichita, Kans.; WBRE, Wilkes Barre, Pa.; WORK, York, Pa.

Exhibits Displayed at Toledo Show.---Arthur W. Susott supervised the showing of five Bureau wildlife exhibits at the sportsmen's show held at Toledo, Ohio, March 18 to 27, which was attended by more than 70,000 persons. Leo H. Monroe, of the Division of Exhibits, Extension Service, assisted him in erecting and dismantling the exhibits.

During National Wildlife Restoration Week, Mr. Susott, Ohio conservation officials, conservationists, sportsmen, and others gave short talks on wildlife restoration at the evening programs of the sportsmen's show. On the evening of March 25, he and Game Management Agent Fred Brint and Federal Deputy

Game Warden Guy Tibbels attended an organization meeting of the Toledo Conservation Council. Mr. Susott also accompanied Mr. Brint on a patrol tour to various waterfowl areas in northern Ohio and southeastern Michigan. Several hundred whistling swans were observed on a private marsh in northern Ohio, and large rafts of canvasbacks on the Lake St. Clair Refuge in Michigan. Scaups, mallards, black ducks, and pintails were also migrating through the Lake Erie area.

Editorial Assistant Appointed.--Ludwig Caminita, Jr., has been appointed as an additional editorial assistant in the Editorial Section, effective April 1, 1938, by transfer from the position of teacher in the National Training School for Boys, Department of Justice. Mr. Caminita holds degrees of B. S. and A.M. from George Washington University, Washington, D. C., where he specialized in zoology and psychology. He has had considerable experience on college publications, as free-lance writer for press, and in editing and publishing periodicals and yearbooks for the Training School, where he was also an instructor in English and general science.

Biological Writer Appointed.--Quintan Wood, appointed February 28 to a temporary position of biological writer in the Section of Current and Visual Information, is assisting in the preparation of information material on wildlife research and management subjects. Mr. Wood's experience includes fiction and article writing as well as newspaper writing and radio broadcasting.

Official Publications, copies of which may be obtained from the Division of Public Relations, have been issued as follows:

- Annotated list and index of leaflets BS-1 to BS-100. By W. L. McAtee, Technical Adviser and Research Specialist, Office of the Chief. Wildlife Research and Management Leaflet BS-100, 20 pp. Jan. 1938. Received Feb. 15.
- Salt requirements of rabbits. By George S. Templeton, Director, United States Rabbit Experiment Station, Section of Fur Resources, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-102, 1 p. Jan. 1938. Received Feb. 15.
- Facts about snakes. Prepared in the Section of Food Habits, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-103, 9 pp. Jan. 1938. Received Feb. 11.
- The status of wildlife research: 1937. By W. L. McAtee, Technical Adviser and Research Specialist, Office of the Chief. Wildlife Research and Management Leaflet BS-104, 30 pp. Feb. 1938. Received Feb. 15.
- The Federal aid to wildlife restoration act. By Albert M. Day, Senior Biologist, Office of the Chief. Wildlife Research and Management Leaflet BS-105, 4 pp. Feb. 1938. Received March 10.
- Report on extension work in wildlife conservation to December 1937. By I. T. Bode, Former Extension Biologist, Extension Service. Abstracted.

by Leo K. Couch, Biologist, Section of Wildlife Surveys, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-106, 7 pp. March 1938. Received March 24.

Planning for wildlife management--an outline. Prepared in the Section of Wildlife Surveys, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-107, 5 pp. March 1938. Received March 24.

History and significance of American wildlife. By H. P. Sheldon, Chief, Division of Public Relations. Wildlife Research and Management Leaflet BS-108, 8 pp. March 1938. Received March 28.

Outside Publications.--Articles by members of the Survey appearing in outside publications have been reported as follows:

Aldous, C. M. Deer kills rattlesnake. Jour. Mammal. 19: 111. Feb. 1938.

Bennett, L. J. The blue-winged teal; Its ecology and management.

Collegiate Press, Inc., Ames, Iowa. 144 pp., illus. 1938.

Cottam, C. Coot swallowed by fish. Wilson Bul. 50: 60, illus. March 1938.

Gabrielson, I. N. Exploring at home. Country Gentleman 107 (3): 17, 75, 76, illus. March 1938.

----- Nelson, A. L.; Martin, A. C.; and Hotchkiss, N. Christmas bird census, 1937. Bird-Lore 40: 41. Jan./Feb. 1938.

Handley, C. O. Winter and the bobwhite; Feed him and he will protect himself. Amer. Wildlife 27 (1): 25. Jan./Feb. 1938.

Lay, G. B. Rat control on the farm. Carolina Cooperator 1 (1): 40. Nov. 1937.

Lincoln, F. C. The waterfowl flyways. Thirty-first Conv. Internatl.

Assoc. Game, Fish, and Conserv. Commrs. Rept. 1937. (Published 1938.)

Sheldon, H. P. Guns and game. Country life and Sportsman 73 (3): 11, 22, 24, 105, illus. Jan. 1938.

----- Guns and game. Country Life and Sportsman 73 (4): 9, 26, illus. Feb. 1938.

Williams, C. S. Notes on the distribution and food habits of the American sea otter, 1936. Jour. Mammal. 19: 105-107. Feb. 1938.

Zahniser, H. Indoors and out-March. Nature Mag. 31: 135, 192. March 1938.

----- Country Matters, by Clare Leighton. (Review.) Nature Mag. 31: 192. March 1938.

Press and Radio Information and Addresses, copies of which (chiefly in mimeograph) may be obtained from the Division of Public Relations, have been issued as follows:

Thomas G. Scott to direct work at Iowa wildlife research unit. Press statement 1380-38. Released Mar. 7.

Night club operator sentenced for serving illegal wildfowl. Press statement 1435-38. Released Mar. 16.

Serving wildfowl jails restaurant operator. Press statement 1464-38. Released Mar. 22.

Fur trader selling beaver pelts gets Federal sentence. Press statement 1480-38. Released Mar. 24.

Market gunners in three States arrested by Federal officers. Press statement 1500-38. Released Mar. 28.

Biological Survey enlarges rodent bait supply depot. Press statement 1603-38. Released Apr. 15.

"Duck Stamps" for hunters interest collectors. Press statement 1636-38. Released Apr. 20.

- Alaskan "fence" guilty; marketed smuggled furs. Press statement 1643-38. Released Apr. 21.
- Wild duck dinners come high in Texas. Press statement 1656-38. Released Apr. 25.
- Market gunners in Memphis area find game law violations expensive. Press statement 1662-38. Released Apr. 25.
- New rules make Alaska sanctuary for martens. Press statement 1664-38. Released Apr. 26.
- Increase in quail. Farm Flashes. Released Mar. 28.
- Industrious beavers aid erosion control engineer. Clip Sheet No. 1028. Released Mar. 13.
- Farm animals injure, wildlife saves, soil. Clip Sheet No. 1030. Released Mar. 27.
- North Dakota boys build novel igloos for birds. Clip Sheet No. 1030. Released Mar. 27.
- Colored leg bands help trace bird migration. Clip Sheet No. 1032. Released Apr. 10.
- Bird refuge gets water from well dug for oil. Clip Sheet No. 1032. Released Apr. 10.
- The hows and whys of making annual waterfowl shooting regulations. Address by Dr. Ira N. Gabrielson, Chief, delivered at the North American Wildlife Conference, Baltimore, Md., Feb. 16.
- Fifty-two wildlife weeks. Radio talk by Howard Zahniser, In Charge, Section of Current and Visual Information, Division of Public Relations, National Farm and Home Hour. Mar. 21.
- All for wildlife. Radio dialogue by Arno B. Cammerer, Director, National Park Service, Department of the Interior, with Dr. Ira N. Gabrielson, Chief, Bureau of Biological Survey, and Wallace Kadderly, Acting Chief, Radio Service, Department of Agriculture, National Farm and Home Hour. Mar. 23.

WILDLIFE RESEARCH

Wildlife Surveys

Confers With Project Leaders.--Dr. Hartley H. T. Jackson spent nearly three weeks during April in the Southwest and South conferring with field project leaders and other Bureau members and cooperators. At Norman, Okla., he held conferences with University of Oklahoma officials and professors, and with C. H. Rouse and Frank McMurtry, of the Wichita Mountains Wildlife Refuge, Okla., inspected the university's new zoological laboratories. The newly outlined long-time research program for the Wichita Refuge was reviewed and other matters pertaining to the refuge discussed during his three-day visit at the refuge.

Dr. Jackson then went to College Station, Tex., for a conference with Dr. Walter P. Taylor, leader of the Texas Cooperative Wildlife Research Unit, and Bureau cooperators there. He and Dr. Taylor also conferred with W. J. Tucker, executive secretary of the Texas Game Fish, and Oyster Commission. They were accompanied by Phillip Goodrum on an inspection trip to areas in the Neches River region in eastern Texas, Kerr County in western Texas and the Chisos Mountains and other parts of the Big Bend country.

At New Orleans, Dr. Jackson conferred with T. D. Burleigh, Bureau cooperators, and E. L. Demmon, director of the Southern Forest Experiment Station. Dr. A. M. Pearson, leader of the Alabama Wildlife Research Unit, met Dr. Jackson at Mobile, Ala., for an inspection on April 19, of the Gulf Shores State Park and other wildlife areas in Alabama. He spent the following day conferring with research workers and officials at the Alabama Polytechnic Institute and inspecting nearby wildlife areas and research projects. He returned to Washington on April 22.

Named Associate Editor of Science Journal.--Dr. Jackson, has been appointed associate editor of the Journal of the Washington Academy of Sciences for the period of January 1938 to January 1941.

Addresses Conservation Group.--To assist in commemorating National Wildlife Restoration Week, Leo K. Couch gave an illustrated talk on March 22, on "Cooperative Wildlife Research" before the Wilmington, Del., Chapter, of the Delaware Fish and Game Protective Association. On his return to Washington, he visited the Bombay Hook Migratory Waterfowl Refuge, Del. Mr. Couch also gave an illustrated talk before the Biological Society of Washington on March 19, on "Applying Research to Wildlife Conservation."

Collared Peccary Decreasing in Number.--Data assembled from questionnaires and correspondence during January by Dr. Walter P. Taylor, of the Texas Research Unit, indicate that the collared peccary, formerly abundant over a large part of Texas, is found now only in southern and midwestern Texas and along the Rio Grande River. The total number now may be less than the annual turnover of 30,000 handled by a single firm in San Antonio about 50 years ago. The animal appears to be decreasing in number where it still occurs in the State and may become extinct unless given protection. An attempt to provide protective legislation failed at the last session of the State legislature.

Estimates 4,000 Antelope in Texas.--Dr. Taylor in a study of the prong-horned antelope in Texas has learned that although this animal is becoming more restricted in its geographical range it is increasing in numbers in limited areas west of the Pecos River. A recent check-up shows that antelope still occur in 31 counties. In 1905, Vernon Bailey recorded their occurrence in 65 counties, and in 1924, Dr. E. W. Nelson reported their occurrence in 46 counties. A report by the land manager of the University of Texas indicated a decrease in Hudspeth County in 1933 from 1,000 to 500 animals as a result of drought. The total number in the State, however, has probably more than doubled in the past 15 years and may now aggregate between 4,000 and 5,000.

Appears in Court Cases.--Dr. Harry C. Oberholser left Washington on March 6, to appear at New Orleans, La., on March 11, as an expert scientific

witness in the court case against Frank DeLerno, charged with selling ducks. The defendant pleaded guilty and was given a jail sentence. From New Orleans, Dr. Oberholser went to Fort Worth, Tex., on March 14, to appear in similar capacity in a conspiracy case against the proprietor of a restaurant. The proprietor, who had sold many ducks and other game to his customers, pleaded guilty and was sentenced to serve 13 months in the Leavenworth penitentiary. Although not called upon to testify Dr. Oberholser's presence in both cases as a Government witness ready to testify that he had identified the ducks seized and bought from the defendants as wild birds is said to have strongly influenced the defense counsel in recommending their clients to plead guilty.

Addresses Hartford, Conn., Clubs.--Dr. Oberholser spoke on April 19, at Hartford, Conn., on waterfowl and their protection before the Hartford Bird Club. On the following day he spoke before the East Haddam Book Review Club and the local Garden Club. Enroute to Hartford, he stopped at Princeton University, N. J., and the American Museum of Natural History, New York City, to obtain data for his research work on the birds of Texas. He returned to Washington on April 21.

Continue Farm-Wildlife Study.--J. Paul Miller and Kenneth A. Lawrence, of the Section of Wildlife Surveys, and Burwell B. Powell, of the Bureau of Agricultural Economics, returned on April 4, from a 6 weeks' trip in Texas, where they continued their study of the economics of wildlife as a supplementary farm enterprise.

Reports on Rodent Cropping.--A. W. Moore, of Hillsboro, Oreg., in checking several timber plantations with J. H. Lenox, of the Cascade Head Experiment Forest, noted the practical absence of rodent cropping to Port Orford cedar as compared with rather heavy cropping of Douglas fir and cascar seedlings. Having recently transferred to this section, Mr. Moore was working under the direction of the Control Methods Laboratory when he originally checked the timber.

The physical equipment for the mountain beaver and rabbit cropping study areas has been completed. A total of 1,501 conifer and alder seedlings on 20 sample plots, each 1 square rod, have been staked, and 4 of the plots fenced against rabbits.

Explains Numbering of White-Footed Mice.--Several persons have asked how white-footed mice are numbered when live-trapped and released. A. W. Moore, stationed at Hillsboro, Oreg., outlined the method he uses as follows: A small pair of dissecting scissors is used upon the ears of the mice, which are slightly smaller than a dime. In the language of cattlemen, 1 underbit, 2 underbits, 1 overbit, 2 overbits, and 1 swallowfork stand for the numbers 1 to 5. Adding the same bits to the swallowfork in the same order gives the numbers up to 9, and a crop indicates zero. For digit figures the marks are applied on the right ear and for tens on the left ear.

Attend Bureau Conference.--Following the Third North American Wildlife Conference held February 14 to 17 at Baltimore, Md., representatives of 9 cooperative research units and three of the men working on forest-wildlife relationships attended a one-day session at the Washington office on matters pertaining to administrative procedure, future program planning, and cooperative features with other sections in the division. Leaders present were: C. O. Handley, of the Virginia Unit; C. M. Aldous, of Maine; L. E. Hicks, of Ohio; A. M. Pearson, of Alabama; Logan J. Bennett, of Pennsylvania; Walter P. Taylor, of Texas; A. S. Einarsen, of Oregon; P. D. Dalke, of Missouri; and D. I. Rasmussen, of Utah. Those working on forest-wildlife relationships included; E. E. Horn, Berkeley, Calif.; Shaler Aldous, St. Paul, Minn.; and John Pearce, New Haven, Conn.

Detailed to Washington.--O. J. Murie, stationed at Jackson Hole, Wyo., has been devoting most of his time since his arrival in Washington on January 29, to the preparation of a manuscript on the elk of North America and a report on the second expedition to the Aleutian Islands, and to assisting in assembling motion pictures of birds and mammals on the Aleutian Islands for a Department film. Enroute to Washington, Mr. Murie conferred at the Wichita Mountains Wildlife Refuge, Okla., with Stanley P. Young, Leo K. Couch, Charles H. Rouse, George E. Mushbach, and several other members of the Bureau and as a result of their inspection a research program has been outlined for the refuge. On April 20, Mr. Murie spoke on the value of the wilderness at a meeting of the Woman's Club of Chevy Chase, Md.

Dr. Victor B. Scheffer, stationed at Seattle, Wash., also a member of the Aleutian Islands expedition, spent the last half of February and part of March in the Washington office studying the invertebrate and other biological material that Mr. Murie, John Steenis, and he collected on the islands.

Determine Range of Wood Rat.--Daniel W. Lay and Rollin Baker, mammalogy students at the Texas A. & M. College, in cooperating with the cooperative research unit there, found that wood rats do not return to their home territory when released more than 400 yards away and seldom travel more than 150 yards from their home points. Animals used in this study were marked.

Alabama Doves Begin Breeding.--Dr. Allen M. Pearson, of the Alabama Research Unit, reports that the breeding of doves was well under way in Alabama during February. Dissections made of birds showed that breeding increased rapidly during the month. The first two dove eggs for the season were found February 26, in a pen containing captive birds. Observations also showed that a small quantity of immature plumage had been retained by late fall nestlings.

Deer Remain on Winter Diet.--White-tailed deer in Alabama, according to Dr. Pearson, remained on a strictly winter diet most of February. As food was scarce, they left dwarf sumac with practically no terminal twigs after browsing. Toward the end of the month the deer ate readily of some herbaceous plants that appeared. They also fed daily on black medic along railroad right-of-ways. Other plants eaten during the month included St. John's-wort, honeysuckle, violets, galium, grasses, and leaves and flowers of dogwood.

Arrange for Seed Plantings.--Arrangements for three different plantings of seed on experimental quail plots at seven places in Alabama have been completed, according to Dr. Pearson. The plots are at Fairhope, Brewton, Headland, Marion Junction, Auburn, Crossville, and Belle Mina. J. W. Webb, a graduate student, weighed and bagged the seed for the first planting. Seed records on the 1937 plots showed that only a few were furnishing sufficient food this season.

A. M. Gray, temporary assistant, has been working full time on the examination of quail stomachs from the Black Belt in order to expedite completion of the work.

Studies Food Habits of Fox.--Walter Rosene, Jr., temporary assistant at the Alabama Research Unit, spent full time during March in studying the food habits of foxes to determine their relationship to quail and other game. A total of 64 fox stomachs have been collected, and during the month 11 active dens were found.

Visits Missouri Turkey Areas.--Dr. Paul D. Dalke, leader of the Missouri Research Unit, spent 10 days in the field during March studying the wild turkey problem. L. W. Hornkobl, wildlife technician of the Gardner National Forest, accompanied him on trips to the Hercules, Blue Springs, and Carmen Springs Refuges, where breeding stock was inspected. On the Hercules Refuge, 5 hens and 1 gobbler are being held in a 90-acre pen. Plans for planting food patches by local rangers on each of the refuges were discussed.

Dr. Dalke also conferred with E. L. Atwood, wildlife technician of the Clark National Forest on plans for planting food patches on the Eleven Points and Wilderness Refuges. All food patch areas were visited and species of plants to be used have been ordered by the Forest Service. A flock of 17 turkeys was observed on the Eleven Points Refuge, and the removal of an off-color gobbler from the flock was recommended. Increasing the protected areas around the area as a temporary measure for turkey management was suggested to I. T. Bode, director of the Missouri Conservation Commission, and approved.

Study Diseases of Moose.--Clarence M. Aldous, of the Maine Research Unit, reports that during February two cases of moose sickness were investigated by the unit. A two-year old cow moose found just north of Brunswick and Bath has improved at the University of Maine, where she was taken for treatment. When found the animal was fair in flesh, but weak in the hind quarters, and was tame enough to be handled easily. An examination of the body showed no evidence of ticks.

The animal was placed in a wooded tract near the university for observation and at first it was necessary to do almost all the feeding by hand. Hardwood browse supplemented with cod liver oil and bone meal together with carrots and cabbage were fed. The cod liver oil was poured or mixed in snowballs and placed in the mouth, and the bonemeal was put between carrot halves.

A mature bull moose, found sick near Mount Vernon, was blind and would charge upon hearing imaginary noises, often running into trees and other obstructions in its path. The animal was shot and on autopsy it was found that cataracts had impaired its vision. Although it appeared to be normal in other re-

spects, section of the heart, liver, spleen, brain, kidneys, and blood samples were collected for laboratory studies.

Talks on Wildlife Subjects.--During March, Mr. Aldous spoke on forest-game relationships at Springfield, Mass., and at Augusta, Maine, on the history and development of conservation. He also gave two talks at Orono, Maine, one before a general assembly during Nation Wildlife Restoration Week, and the other before freshman forestry students at the University of Maine.

On March 31, Mr. Aldous and Howard Mendall set up a hawk exhibit for the Somerset County Sportsmen's Show held at Skowhegan, Maine, from March 31 to April 2.

Outline Woodcock Studies.--An outline of the proposed program of summer work on the woodcock studies at the Main Research Unit includes: checking last year's singing grounds to determine percentage used this year; checking artificially created singing grounds to see if they are used this season; continuing the banding of young birds; further mortality studies; building up the motion picture film to include banding operations, dogs at work on locating broods and at hunting time, young birds and their habits; seasonal movement studies; habitat studies; parasitism and disease studies.

Beavers on Willow Diet.--D. O'Brien, who has held two beavers on a strict willow diet at the Maine Research Unit, reports that they are consuming between 8 and 12 pounds of food daily, weigh 34 and 36 pounds, respectively, and appear to be in good health.

Studies Beaver.--In a recent visit to a beaver farm in northern Minnesota, Shaler E. Aldous, assistant biologist, stationed at the Lake States Forest Experiment Station, St. Paul, Minn., obtained considerable data on beaver habits and their requirements. The owner of the farm, who has been propagating beavers more than 20 years and previously had been a private and State trapper, now has 80 animals penned in a long narrow shed. He stated that each week it takes an average of 3 face cords of aspen 16 inches long and 2 to 5 inches in diameter to feed the beavers. A cord of this wood is being peeled for obtaining data on the quantity of bark consumed.

Conclude Chinese Pheasant Study.--Arthur S. Einarsen, of the Oregon Research Unit, reports that a study of Chinese pheasants released at Fossil, Oreg., in November 1937, was brought to a close at the end of February. Although mild winter weather did not permit studying the effect of late-fall plantings, it was discovered that a reduction of 30 percent in the number of birds released was caused chiefly by predators. Other causes of loss were from birds flying into objects or being killed by automobiles; killing by man; and destruction by house cats, skunks, and other land mammals.

Complete Winter Antelope Census.--Mr. Einarsen reports that a winter census of antelope in Oregon and a study of the herds in adjoining Nevada were com-

pleted during January. Approximately 15,000 antelope are still foraging within the State, and since this is about 2,000 less than those counted during the past two summer censuses, it indicates that the migration out of the State is rather limited. Field Observer A. V. Meyers reports that there is a definite migration northward and westward from the summer range area. Winter conditions also have affected the antelope, and deer similarly, as neither have developed intensive concentrations in any area.

Study Deer Mortality Records.--Mortality records for deer-problem areas in Oregon indicate that approximately 70 percent of the deaths are of immature animals. Mr. Einaresen and his assistants at the Oregon Unit are awaiting the next few weeks with interest to learn the success of newly designed live trap for deer for use in studying their migrations and other habits.

Finds Grouse Using Summer Range.--Dr. D. I. Rasmussen, of the Utah Research Unit, reports that Lynn Griner, graduate student, made two field trips to the Strawberry Valley area during the winter to observe the activity and distribution of sage grouse. He found the birds remaining on a range normally used only in summer, apparently because of the subnormal snowfall. A study showed that birds' food consisted practically 100 percent of sagebrush, the only plant that was protruding through the snow. Mr. Griner estimated 1,000 birds in the heavy concentration area immediately east of the Strawberry reservoir and south of U. S. Highway 40.

Take Part in Game Management Conference.--William H. Marshall and Dr. Rasmussen attended a meeting on March 18 and 19, of the Second Southern Idaho Technical Game Management Conference held at the University of Idaho, Southern Branch, at Pocatello. Mr. Marshall presented a paper on "Present Knowledge of Furbearers in the Rocky Mountain Region," while Dr. Rasmussen gave a talk on "The Sage Grouse." The meeting was attended by officials of the University, the State Game Department, the Biological Survey, the Forest Service, the National Park Service, and the Soil Conservation Service, and by representatives of the Idaho Wildlife Federation and stockmen.

Donates Mammal Collection to Bureau.--A. H. Trowbridge, of the Section of Food Habits, has presented the Bureau 99 mammal skins and skulls and a skeleton collected before he joined the Bureau. These specimens, mostly Oklahoma material, include the following: 48 pocket gophers, 13 rabbits, 3 cotton rats, 4 kangaroo rats, 4 wood rats, 2 ground squirrels, 11 deer mice, 8 pine mice, 1 harvest mouse, 1 hairy-tailed mole, 2 short-tailed shrews, and 2 common moles.

Makes Survey of Wildlife Conditions.--Complying with a request from the Mill County Wildlife Federation, Joliet, Ill., Dr. Logan J. Bennett, of the Pennsylvania Research Unit, while leader of the Iowa Research Unit, made a preliminary survey during February of wildlife conditions in that county. Accompanied by W. M. Knutsen, secretary of the Wildlife Federation, Dr. Logan covered Mill County by automobile and airplane. He made recommendations for restoring Eagle

Lake, a marsh area of several thousand acres drained by mine stripping, outlined plans for a proposed rabbit and quail management project in the vicinity of Custer Park, and proposed other conservation activities for local groups.

Continue Florida Biological Survey.--A. H. Howell and Luther C. Goldman left Washington on March 1 by automobile for Florida, where they will work two months in continuing a biological survey of that State. Their field research, covering principally the Gulf section of Florida, will be devoted chiefly to mammals.

Revises Mammal Check List.--Dr. W. B. Davis, of the Texas A. & M. College, has completed a revised check-list of the mammals of Texas and is now engaged in working up a check-list of the birds and mammals occurring on or near the college campus. He is also keeping a record of the mortality of birds and mammals on a stretch of the highway between College Station and Bryan, where cottontails have a higher incidence of mortality than any other native mammal of bird. Armadillos come second and opossum third. Only one bird, a jay, has been observed dead on the highway in the past 5 months.

Confer at Mammal Laboratories.--Conservationists or zoologists who recently studied specimens and records at the mammal laboratories, or obtained information through conferences included Fred S. Barkalow, Jr., Alabama Polytechnic Institute, Auburn, Ala.; Dr. Wm. J. Hamilton, Jr., Cornell University, Ithaca, N. Y.; Wm. Albee, Geneva, Ill. Senor Juan Zinser, Chief Game Section, Mexican Forestry, Fish and Game Department, Mexico City, Mexico; Dr. R. M. Anderson, National Museum of Canada, Ottawa, Canada; Lawrence V. Compton and Adrey E. Borell, Soil Conservation Service, N. Mex.; Richard G. L. Ayer, of the Philadelphia Academy of Sciences, Philadelphia, Pa.

Transfers.--Miss Genevieve M. Andruczyk transferred on February 1, from the Section of Food Habits to this section, where she is now employed as an assistant clerk-stenographer. She fills the vacancy created by the transfer of Miss Emily M. Harrison to the field office of the Bureau of Internal Revenue at Pittsburgh, Pa.

Harold W. Norton, of the Bureau of Dairy Industry, transferred on March 2, to this section as a junior biological aide and is working on the mammal collection.

Food Habits Research

Presents Paper on Mosquito Control and Wildlife.--On March 25, Dr. Clarence Cottam presented a paper on "The Correlation of Mosquito Control With Wildlife Conservation" at the 25th annual meeting of the New Jersey Mosquito Extermination Association held from March 22 to 25, at Atlantic City. Dr. W. S. Bourn also attended.

Dr. Cottam was in Connecticut from February 21 to 28, and from April 10 to 15, to aid in correlating proposed W. P. A. mosquito control projects with

wildlife conservation. On the latter trip he was accompanied by Lawrence W. Saylor. On March 18, Dr. Cottam attended a meeting of the Delaware Fish and Game Protective Association at Dover to discuss mosquito-control operations in the State. The meeting was attended by directors of the association, the Board of Fish and Game Commissioners, the State entomologist, the executive officer and engineer of the Mosquito Control Commission and his assistants, sportsmen, trappers, newspapermen, and J. F. Herholdt, H. Buckalew, and Dr. W. S. Bourn, of the Bureau.

Shows Value of Persimmon for Wildlife.--Dr. Cottam represented the Bureau at a meeting called by A. S. Hoyt, Assistant Chief of the Bureau of Entomology and Plant Quarantine on March 9, to consider Departmental policy dealing with persimmon blight. He explained that the persimmon is of great importance to wildlife as it is one of few plants that thrive well on poor soil and furnish food for many species of birds and mammals, particularly foxes, raccoon, opossums, and wild turkeys.

Norwegian Naturalist Visits Bureau.--Per Höst, a Norwegian naturalist, conferred with members of the Food Habits Section and other members of the Survey during a visit to the Department in April. As an investigator for a Norwegian sportsmen's association, he is studying American wildlife management methods with a view to improving the work in Norway.

Visits Section.--Late in January, Dr. D. L. Serventy, of Subiaco, West Australia, spent several hours with Dr. Cottam discussing food habits research.

Observes Winter Feeding of Canada Geese.--Seedling growths of peppergrass annuals, June grass, and renewed growths of perennial saltgrass were fed on extensively, in the order named, by Canada geese at the Bear River Migratory Bird Refuge, Utah, during January. C. S. Williams studied the feeding habits of thousands of waterfowl that remained on the refuge during an exceptionally open winter. He reports that waterfowl foods were plentiful and neither ducks nor geese were hard-pressed, even when a few heavy snows temporarily covered much of the available food.

Studies of seed storage and germination being continued at the refuge indicate that treatments involving conditions similar to those the seeds undergo naturally are best for retaining viability and for inducing ready germination under satisfactory growing conditions. Of the many species tested, the pondweeds and bulrushes have germinated the least readily, but alternate freezing and thawing has produced fair results.

Studies Clarifying Effect of Salt Water.--John J. Lynch, stationed at the Delta Migratory Waterfowl Refuge, La., has found that 10 percent sea water was effective in clarifying a sample of turbid Mississippi River water and that even 1 percent sea water has a perceptible effect. The experimental results he obtained during January demonstrate in a general way what happens in refuge ponds in the Mississippi Delta area that receive silt-laden flood water in winter and spring and sea water in summer. A large quantity of the settled-out material accumulates

on the bottoms of the ponds but is stirred up too much by bottom-feeding fishes to permit the growth of aquatic vegetation. As this material, however, provides ideal environment for crustaceans and small fishes that are eaten by waterfowl, it appears that these ponds may be effectively managed for a greater production of waterfowl food.

In continuing his study of methods for controlling excessive growths of alligatorweed, Mr. Lynch has observed that its growth appears to be retarded by a parasitic fungus. At the Rice Experiment Station at Crowley, La., he also observed methods used in the control of weeds in ricefields and was informed that through their heavy consumption of seeds ducks probably play an important part in controlling weeds.

Completes Analysis of Blue Fox Food.--During February C. S. Williams completed an analysis of more than 1,000 blue fox droppings collected on the Aleutian Islands in 1936, and expects to summarize the results of his findings shortly. Knowledge of the food consumed by blue foxes on these islands is necessary for developing management methods that will also preserve other forms of valuable wildlife.

Build Goose-Nesting Sites.--At the Bear River Migratory Bird Refuge, Utah, Mr. Williams has supervised the construction for Canada geese of 38 artificial nesting places that resemble muskrat houses. These geese nest on muskrat houses on the refuge, and it is hoped to attract more of them by providing artificial nesting sites. A study is also being made of the vegetative growth on banks constructed on the refuge, and later on a survey will be made to determine their value for duck nesting.

Installs Duck Propagation Equipment.--During March, Mr. Williams installed most of the equipment at the Bear River Refuge that is to be used in experiments with the artificial propagation of wild ducks, particularly redheads. It is planned to salvage eggs from nests that are damaged by flood waters and other causes with the hope that the young from these eggs will be adopted by ducks rearing broods of naturally hatched ducks.

Mr. Williams reports that the first goose nest on the refuge this year was found on March 21. Observation of feeding habits of geese there indicate that seedling squirreltail grass is preferred at this time of the year to the more abundant seedlings of peppergrass and brome grass and new shoots of saltgrass.

Praises Bureau for Exhibit Help.--In a recent letter, Henry P. Davis, secretary of the American Wildlife Institute, thanks the Bureau for its assistance in arranging wildlife exhibits that the Institute sponsored at the North American Sports, Garden, and Outdoor Life Show held at Baltimore, Md., in February. Mr. Davis said: "We cannot praise this work too highly. It is cooperation of that type that produces results." Exhibits in the Wildlife Institute's space were arranged by Robert C. McClanahan, C. F. Smith, and others of the Section of Food Habits. The exhibits were supervised by Lisle Morrison, who represented the Institute.

Revises Farmers' Bulletin.--E. R. Kalmbach, of the Denver Food Habits Laboratory, is revising Farmers' Bulletin, "The Crow in its Relation to Agriculture" to include later information obtained in recent investigations in Oklahoma and Texas and on a number of waterfowl areas. Late in February, Mr. Kalmbach and Dr. Don R. Coburn, of the Bear River Migratory Bird Refuge, Utah, attended the Oklahoma Ranger School at Tulsa. Mr. Kalmbach spoke on waterfowl studies and used lantern slides to illustrate his talk. On his return trip to Denver he conferred with the superintendent of a game farm at El Reno, Okla.

Completes Crow Study.--Ralph H. Inler, junior biologist at the Denver Food Habits Laboratory, has completed his appraisal of crow damage to grain sorghums and other later crops in Oklahoma for determining the necessity of crow control. The Extension Service cooperated in this study by sending out questionnaires while Mr. Inler was appraising the damage in representative crow areas. His appraisals will be used as criteria in evaluating the data being tabulated by the Extension Service.

Studies the Food of Mergansers.--Charles C. Sperry, associate biologist of the Denver Laboratory, resumed his study of the food habits of mergansers on the Elephant Butte Reservoir late in January and remained in the field until the middle of February. While there he collected stomachs of these birds and observed their feeding habits.

Studies Goose Nesting at Malheur Refuge.--Clarence A. Sooter, junior biologist of this section, assigned temporarily to the Malheur Migratory Bird Refuge, Oreg., reports in a preliminary survey of Lake Malheur that he had found 38 goose nests up to April 7, 11 of which were on a large hay stack. Mr. Sooter arrived at the refuge in March to investigate causes of nesting mortality among waterfowl and to ascertain nesting cover requirements of various species. Enroute to the refuge, he conferred with E. R. Kalmbach, of the Denver Food Habits Laboratory, and C. S. Williams, of the Bear River Refuge, Utah, on plans for these studies.

Explains Bird Control.--Johnson A. Neff, stationed at Sacramento, Calif., explained methods of bird control on February 8, at the weekly school that Agricultural Commissioner Mahoney conducts at Stockton for his employees. Mr. Neff recently completed his manuscript on trapping English sparrows, for publication as a Bureau Leaflet, and has also submitted for editing a preliminary draft of part 3 of his manuscript on procedure and methods in controlling birds injurious to crops in California. On March 25, he moved his office into enlarged and renovated quarters in the Federal Building at Sacramento.

Inspect Malarial Control Projects.--A. C. Martin and R. C. McClanahan left Washington on March 17, for Atlanta, Ga., to inspect proposed W.P.A. malarial control projects. Mr. Martin returned to Washington on March 25, while Mr. McClanahan remained to make further inspection of Georgia and South Carolina malarial projects.

Assigned to Washington.--Since January 15, A. M. Gray, graduate assistant at the Alabama Polytechnic Institute at Auburn, has been assigned to the Food Habits Section in Washington, to work on the food habits of bobwhite quail and white-tailed deer. The data obtained will be included in a study of these two forms of wildlife being made by the Alabama Cooperative Wildlife Research Unit.

Investigates Effects of Drainage.--A. C. Martin was in Michigan from February 25 to March 4, investigating the effects of drainage operations on wildlife and conferring with officials in charge of drainage projects.

Leaves for Bear River Refuge.--Albert H. Trowbridge, junior biologist in the Washington office, left April 12, for the Bear River Refuge, Utah, to assist Cecil S. Williams in waterfowl studies. He will return to Washington about August 15.

Inspects F. S. A. Lands.--H. L. Blakey, of the Section of Wildlife Surveys, and Neil Hotchkiss were in Kentucky, Arkansas, and Mississippi from March 12 to 26, inspecting projects of the Farm Security Administration to determine their actual and potential value for wildlife production.

W. P. A. Help Allotted to Section.--Thirteen typists and clerks were recently assigned by the Works Progress Administration to the Food Habits Section to assist in checking and arranging files, curating collections, indexing and tabulating stomach contents, and bringing other work up to date. Four W. P. A. employees previously assigned to this section by the Soil Conservation Service are also assisting in the work. A complete list of the employees is as follows: Edward Anderson, Miss Hazel Bowen, Daniel Bowen, Edward J. Brophy, Roy E. Cole, Thomas B. Conner, Ruben Dagenhart, Miss Anna M. Ferguson, Miss Margaret Jackson, Miss Pherne Miller, Miss Lea Maloney, Leo Reznikov, Miss Evelyn Rider, Harry Rogers, Miss Emma Skrivanek, Miss Helen Statts, and Edmund Stellmach.

Transfers.--Mrs. Winfred W. Deering transferred to this Section on March 16, from the Division of Wildlife Refuges to fill a junior clerk-stenographer position left vacant by the transfer of Miss Genevieve M. Andruczyk to the Section of Wildlife Surveys.

Miss Madelyn M. Conley, formerly a temporary junior clerk-stenographer in this section, was appointed to a permanent position in the Navy Department on April 1. Miss Mary H. Leggio of New York City, was appointed May 2, to fill the vacancy caused by Miss Conley's transfer.

Distribution and Migration of Birds

Visits Florida and Georgia Wildlife Areas.--On March 13, Frederick C. Lincoln accompanied Chief Gabrielson and other members of the Bureau to Jacksonville, Fla., to attend a conference with game officials of the Southern States. He presented information on the status of the mourning dove.

After the conference Mr. Lincoln, A. M. Day, and F. P. Callaghan of the Washington office, Regional Director James Silver, and Dr. Allen M. Pearson, of the Alabama Cooperative Wildlife Research Unit, inspected the Okefenokee Wildlife Refuge, Ga. Near Brooksville, Fla., Mr. Lincoln, Mr. Day, and Mr. Silver

visited one of the three Withlacoochee areas of the Farm Security Administration, a project of 120,000 acres. At least a third of one area containing 50,000 acres is in lakes, ponds, and sloughs. Many of the ponds appeared to have an abundance of duck foods while some others were sterile. The area as a whole appears to be ideal for deer and quail. On returning to Brooksville the party inspected the Chinsegut Hill Migratory Bird Refuge and on the following day visited another part of the Withlacoochee project. This part, covered with longleaf and slash pines, does not appear so suitable for wildlife as some of the others.

Game Management Agent Kelsey and one of his deputies joined the party at Brooksville and with them inspected the Chassahowitzka River from its source to the Gulf of Mexico. Waterfowl food was found abundant in this river and considerable numbers of pintails, shovelers, blue-winged teals, ring-necked ducks, lesser scaups, and a few ruddy ducks were observed. After a brief inspection of the area at Homossa Spring, Agent Kelsey and his deputy left and the party continued to Tallahassee.

On March 19, Mr. Lincoln, Mr. Day, and Mr. Silver, visited the St. Marks Migratory Bird Refuge, accompanied by Manager R. A. Cochran. A number of Canada geese were still there and a fair number of ducks. The banding station there also was examined. During the past season refuge employees were successful in catching more geese in the banding trap at night than during the day. Returning to Tallahassee the party stopped for a short visit at Wakulla Spring, where Mr. Lincoln saw 20 to 25 limpkins, the first he had ever seen.

On March 20, the three inspected the game management work of Herbert L. Stoddard and Ed Komarek, near Beachton, Ga. Mr. Lincoln, who visited the area in 1924, reports that wildlife environmental conditions there have been greatly improved by the management practices. Leaving Mr. Day and Mr. Silver at Tallahassee on March 20, he returned to Washington.

Reports Bird Banding Progress.--Mr. Lincoln spoke on "Progress of Bird Banding" at a joint meeting of the Massachusetts Audubon Society and the Northeastern Bird Banding Association at Boston, Mass., on January 12. He also explained the progress the Bureau is making its waterfowl restoration program.

The following day Laurence B. Fletcher, of Cohasset, Mass., Charles B. Floyd, secretary-treasurer of the Northeastern Association, and Mr. Lincoln inspected old goose hunting stands as far south as Plymouth. Their abandoned appearance indicated that waterfowl regulations prohibiting the use of live decoys have stopped this method of attracting waterfowl during the hunting season. Mr. Fletcher recalled that at one point a dozen or more guns were in the stand when a flock of 39 geese were attracted there by 300 live decoys. Only 2 of the wild birds escaped. A gratifying increase in the number of black ducks was noted, the inner marshes along the entire coast being well populated.

Broadcasts.--Mr. Lincoln and Watson Davis, director of Science Service, presented a radio dialogue on "How Fast Do Birds Fly?" on March 10, over the Columbia Broadcasting System from Station WJSV. On April 3, he and Bill McCormick, of the American Wildlife Institute, participated in a radio dialogue broadcast over the Mutual Broadcasting System from Station WOL on "The Mysteries of Migration."

Visit Susquehanna Flats.--Harold S. Peters, Atlantic Flyway biologist, Senor Juan Zinser, Chief of the Game Section of the Mexican Forestry, Fish, and Game Department, and several other visitors to the North American Wildlife Conference at Baltimore, Md., observed about 6,000 ducks and 1,600 whistling swans during a trip on February 18, to the Susquehanna Flats on the Survey patrol boat Canvasback. Early in the fall about 200,000 canvasbacks were reported on the flats, but by the middle of December practically all had left. They do not seem to remain there as late in winter as formerly, possibly because silt deposits on the wildcelery beds limit their food supply.

Flyway Biologists Plan Summer Work.--Flyway Biologists C. E. Gillham, of Mississippi Flyway, Dr. George B. Saunders, of the Central Flyway, and Luther J. Goldman, of the Pacific Flyway, upon completing their winter assignments have been engaged in the preparation of reports and making plans for their investigations this summer on the waterfowl breeding grounds in Canada. As the spring migration progressed they made local investigations to ascertain the status of birds.

Two Chimney Swifts Winter in Louisiana.--George H. Lowery, a bird-banding cooperator of the Bureau stationed at the Department of Zoology and Entomology, Louisiana State University, reports that two chimney swifts remained in his vicinity all winter. He succeeded in banding one of them late in February. An account of his observations of the other bird will appear in an early issue of The Auk.

Use Banding Files.--During the week of April 4, Jack Arnold, Dirck Benson, and Joseph Howell, graduate students of Cornell University, consulted distribution and banding files in this section to obtain data for their studies of the blue jay and robin.

Interesting Returns from Banded Birds.--Returns of outstanding interest from banded birds are listed in the following table, which shows band number, place and date of banding, and place and date of recovery:

Franklin gull:

37-514389, S. Dak., Sand Lake Refuge, 6/25/37	Guatemala, Champerico, 2/1/38
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Laysan Island Albatross:

36-814925, Pacific Ocean, Midway Is., July, 1937	Kinkazan (Japan), 310 mi. off coast, 12/12/37
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Mallard:

A689313, La., Abbeville, 12/31/30	Minn., Frazee, 10/12/37
34-611659, N. Y., Rochester, 10/26/36	Minn., Marshall Co., 10/16/37
34-611855, " " Fall 1936	Mich., Rockwood, 10/25/37
34-644573, Pa., Phoenixville, 10/25/36	Minn., Weaver, 11/2/37

Black duck:

34-611911, N. Y., Rochester, 10/21/36	Minn., Onamia, 10/9/37
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Black-crowned night heron:

36-705093, S. Dak., Sand Lake Refuge, 7/2/37 Fla., Oak Hill., 2/1/38

Marsh hawk:

37-509701, Minn., Minneapolis, 6/25/37 Cuba, Havana, 1/26/38

Cooper's hawk:

A573005, Man., Charleswood, 7/8/37 S.A., Andalucia, Colombia, 2/1/38

Red-tailed hawk:

37-709857, Md., Seneca, 5/6/37 Ill., Mascoutah, 8/30/37

Harlan hawk:

36-720569, Kans., Stockton, 11/24/36 Alta., Lacombe, 12/7/37

Blue jay:

414306, Ohio, Lakewood, 11/15/27 Ohio, Lakewood, retrapped
11/29/27; 5/27/28; 6/3/28;
12/15/29; 1/19/30; 5/28/30;
and 5/23/37.

Bronzed grackle:

A446165, Mo., Kansas City, 6/6/32 Mo., Kansas City, 5/15/33
" " " " " Tex., Houston, 2/23/37
" " " " " Mo., Kansas City, 5/19/37

Evening grosbeak

34-208518, N. H., Milford, 1/29/34 Mich., Sault Ste. Marie,
2/12/38
34-251704, Man., Norwood, 1/4/35 Man., E. Kildonan, 12/2/37
(trapped and released by
another cooperator)

Nuttall's sparrow

A178778, Calif., Berkeley, 6/19/30 Calif., Berkeley, 9/17/37

Cape May warbler;

36-25710, N. Y., Elmhurst, 9/12/37 Tenn., Cleveland, 10/15/37

Chickadee:

C21641, Maine, Bar Harbor, 10/16/29 Maine, Bar Harbor, 11/12/37

Fur Resources

Visit Washington Office.--Many prominent fur farmers and editors of fur farming magazines, who attended the recent hearings on proposed tariff on silver fox skins conducted by the reciprocity committee of the Tariff Commission, visited the Section of Fur Resources to confer with Frank G. Ashbrook and Chas. E. Kellogg on the progress of fur farming. The latter two also attended the tariff hearings.

Mice Damage Muskrat Pelts.--Dr. Herbert L. Dozier, director of the Fur Animal Field Station, Cambridge, Md., reports that several trappers this season have had their muskrat pelts damaged by small mice, known locally as "marsh monks" or "bob-tailed Susies." These rodents reduce the value of pelts considerably by gnawing holes about the size of 25-cent coin in the back of muskrats caught in traps. The damage they create is commonly referred to as "cut-backs."

Trap Muskrats of Unusual Colors.--Dr. Dozier reports that trappers operating this past season in the vicinity of the Blackwater Migratory Bird Refuge, Md., caught 7 snow-white muskrats, 7 showing varying degrees of smokiness, from slight indications on the head to a distribution over the entire body, 5 smoky gray, and 1 smoky brown. About 40 to 50 percent of the muskrats taken on the Eastern Shore of Maryland are black and the remainder brown.

Live animals of unusual colors have been caught for the field station and are being mated in pens to determine their genetic relationships. There are now 27 black muskrats--16 females and 11 males--including 1 brown female, 1 smoky white female, and 1 white male. The animals are also weighed at regular intervals to determine their response to certain feeds.

During February, Dr. Dozier collected 229 reproductive tracts of muskrats and forwarded them to Dr. Robert K. Enders, at Baltimore, Md., for detailed study.

Study Muskrat Pelts for Prime Period and Quality.--To obtain more data on the prime period and quality of muskrat fur taken on the Blackwater Migratory Bird Refuge, Md., selected pelts were forwarded to fur experts for description and evaluation. Five black and brown muskrat pelts selected at random at intervals of 10 days during the trapping season were sent to the fur experts. Skins from both males and females were included.

Visit Fur Animal Field Station.--After attending the North American Wildlife Conference held in February at Baltimore, Md., R. H. B. Bonnycastle, in charge of fur resources for the Hudson Bay Company, Winnipeg, Canada, visited the Fur Animal Field Station at the Blackwater Migratory Bird Refuge, Md. He was favorably impressed with the station and its research program and said that fur interests in Canada were greatly interested in the progress of fur investigations in this country.

Frank N. Jarvis, of the Division of Predator and Rodent Control, visited the field station on February 11, to inspect damage by short-tailed pine mice to young pine seedlings. Many seedlings had been completely girdled near the ground and numerous runways of mice were found near the muskrat enclosure.

Mink Study Progresses.--Dr. Robert K. Enders, stationed at Johns Hopkins University, Baltimore, Md., reports that approximately 400 slides have been completed in his study of the reproductive cycle of the mink. Eleven laparotomies were performed on 7 animals to study the influence of certain hormones and obtain material for use in research.

On March 25, David MacIntyre was appointed an agent to assist Dr. Enders in sectioning and slide making.

Reports on Rabbit Industry in Southern States.--The main problems confronting rabbit breeders in southern States are control of mucoid enteritis, cost of feed, and lack of suitable hutch equipment, reports George S. Templeton, director of the Rabbit Experiment Station at Fontana, Calif. He recently completed a trip through these States to confer with rabbit breeders and officials of agricultural colleges. This section of the country, says Mr. Templeton, is well-adapted to raising rabbits as weather conditions are satisfactory and legume grown locally make it possible to supply green feed most of the year. The

industry is making a healthy growth, but in the large cities its market can stand further development. Many rabbits, however, are sold in large cities to biological laboratories.

Disease Control

Addresses Maine Fur Farmers.--Dr. J. E. Shillinger spoke on diseases that affect reproduction in fur animals at a meeting of Maine fur farmers held in connection with the Farm and Home Week at the University of Maine, March 29 to April 1. Enroute, he stopped at several fur ranches to investigate disease outbreaks and to recommend methods of control.

On March 30, Dr. Shillinger and C. M. Aldous, of the Maine Cooperative Wildlife Research Unit, investigated a case of moose sickness in the vicinity of Surrey, Maine. The animal which was lassoed for examination, was in a weakened condition and carried such a heavy infestation of ticks that when it would lie down the snow would show many drops of blood and engorged ticks that had dropped off. After being treated with a mixture of fly spray and heavy oil the moose within a few days showed renewed strength and vigor. Dr. Shillinger points out that this case and many others have been reported and are due largely to anemia brought on by the rapid and constant withdrawal of blood by large numbers of ticks.

Conducts Pullorum Tests.--On March 21, Dr. Shillinger conducted tests for pullorum disease on a game farm in Virginia to determine the incidence of this disease in artificially propagated bobwhite quail. Some of the birds were brought to the Washington laboratory for more detailed examination.

Reduce Number of Deer to Control Fever Ticks.--Dr. F. D. McKenney spent March 14 to April 7, in Orange County, Fla., obtaining specimens and blood samples from deer killed in connection with the State's deer reduction program for controlling fever ticks. In the approximately 7 1/2 townships in Orange and Osceola Counties that are within the quarantined area, the largest percentage of tick infestation is on a private game preserve. Forty-one percent of the animals taken there were infested. A late report on the work showed that it took the full time of 20 State hunters and 78 commissioned sportsmen to take 139 deer. The State hunters killed 127 and the sportsmen 12.

Attends Oklahoma Rangers' School.--During February, Dr. Don R. Coburn, in charge of disease investigations at the Bear River Migratory Bird Refuge, Utah, gave an illustrated lecture on infectious diseases of wildlife at the Oklahoma Rangers' School, at Tulsa. He also gave a talk on noninfectious and parasitic diseases of wildlife and participated in several informal discussions on disease problems.

Investigates Blindness Among Colorado Deer.--The reported outbreak of infectious keratitis among deer in Colorado was investigated in February by

Dr. Coburn. After conferring with Regional Forester J. V. Leighon, at Gunnison, he was accompanied by George Burnett, of the Forest Service, in his field studies. They learned that only a small number of cases of blindness or impaired vision had been observed, and that practically all the affected animals were spike buck fawns. None showed active lesions or outward evidence of infection when shot.

Investigate Elk Disease.--Dr. E. R. Quortrup, of the Bear River Migratory Bird Refuge, Utah, accompanied by members of the Idaho Game Department, made a trip in February to the Chamberlain Basin by airplane and on foot to investigate a reported disease outbreak among elk and coyotes. Six elk were reported to have died from mange, but no sick animals were observed. The coyotes reported dying from rabies were found to have been poisoned by trappers. Dr. Quortrup and the State game officials were handicapped greatly in their investigations as the territory in which they worked was covered by 30 inches of snow and deep drifts.

LAND ACQUISITION

Approves Acquisition Program.--Late in February, Dr. Gabrielson considered the acquisition program for the coming field season and approved the institution of negotiations for the lands necessary for consolidating and rounding out many existing refuges. Although the total acreage and the financial consideration based on available appraisal figures are not great, transactions for the most part will be difficult to accomplish and in some cases may involve technicalities. Negotiations for the land are already under way and by the first of June most of the acreage will probably be under purchase contracts, or arbitrary condemnations that must be resorted to will be known.

Prepare for Condemnation Cases.--This spring and summer will probably be the most active the division has experienced in the condemnation of lands. The field and Washington office force is devoting much time preparing for court proceedings. As a large percentage of the condemnation suits are being contested many data must be assembled and arrangements made for having competent witnesses from the Bureau and outside to testify.

Confer With New York Conservation Officials.--On March 15, Mr. Dieffenbach and Fred R. Kessler, in company with A. C. Elmer, of the Division of Wildlife Refuges, and Warren E. Hall, of the Bureau of Agricultural Engineering, went to Albany, N. Y., and conferred with State conservation officials, Lithgow Osborne, William C. Adams, and Gardiner Bump on plans for developing and utilizing water resources on the Montezuma Refuge, in Seneca County, N. Y. A number of technical questions had arisen, as the refuge is in a country that is highly developed and traversed by a barge canal system. A satisfactory agreement for developing the refuge area was reached, and on April 5, another meeting to work out further details was held at Syracuse, N. Y., at which Mr. Kessler, Mr. Dieffenbach, and Mr. Hall, were present.

Confers With Landowners.--On April 4, Mr. Dieffenbach went to New York, where he conferred with owners of land that is being considered for refuge areas.

Refuge Established.--The Hewitt Lake Migratory Waterfowl Refuge, of approximately 1,200 acres in Phillips County, Mont., was established March 7, by Executive order.

During the current fiscal year the President has approved 21 Executive orders for the reservation of 36,150 acres of public lands and 228,671 acres of purchased lands for wildlife refuges.

Surveys and Maps

Attends Court on Pea Island Case.--Arthur A. Riemer left Washington on March 26, in company with Mr. Dieffenbach and Dr. Clarence Cottam, of the Food Habits Section, and John J. Curry, of the Solicitor's Office, to attend a trial involving condemnation proceedings for acquiring the Pea Island Club property on the Pea Island Migratory Waterfowl Refuge, N. C. The case came to trial on March 30, in the Federal District Court for eastern North Carolina at Elizabeth City. Mr. Riemer was prepared to testify with reference to the acreage of the lands since the vendor had contracted to convey all his holdings, claimed to be 3,415 acres, to the Government. Bureau engineers, however, found that property contained only 2,702 acres, or 21 percent less than claimed. The court decided that two issues were involved, one the value of the land, and the other the question of acreage. The question as to value was tried before a jury on March 30, and the court decided that the acreage question should be referred to an engineer appointed by the court.

Late in March, Mr. Riemer and George L. Ducret inspected the survey work on the Pea Island Refuge preliminary to the court trial. An Executive order establishing the refuge was issued April 8. Situated on the Atlantic Coast and extending about 13 miles south of Oregon Inlet in Dare County, the refuge is an important wintering area for brant, snow geese, redhead ducks, and other waterfowl. Other birds protected on the refuge include herons, gallinules, plovers, yellow-legs, avocets, black-necked stilts, and black skimmers.

Map Work Progresses.--Acquisition status maps for the Bureau atlas on the scale of 1 inch to the mile have been completed and are available for Rice Lake Migratory Waterfowl Refuge, Minn., Red Rock Lakes Migratory Waterfowl Refuge, Mont., and Valentine Migratory Waterfowl Refuge, Nebr. Copies have been distributed to the regional directors and refuge managers concerned.

Work on the atlas for the Upper Mississippi River Wildlife and Fish Refuge is well under way, work having been completed on the base maps for 10 of the 56 sheets. A new index map of 3 sheets is also being prepared, copies of which are being forwarded to the refuge manager and the regional director as the work progresses.

State maps for the atlas are also being made, on which all Federal refuges within a State will be shown.

Works on Chautauqua Refuge.--Kenneth C. Kern is reflagging the entire southeastern boundary of the Chautauqua Refuge project in Illinois for condemnation purposes and is beginning surveys for fence construction.

Appraisals and Negotiations

Confer on Land Acquisition.--W. L. Towns and Chas. S. Cook have returned to the Des Moines, Iowa, office after conferences late in February with Minnesota officials on the proposed acquisition of State lands and with representatives of the Indian Service on obtaining Indian lands on the Tamarac Refuge project in Minnesota. A special tax evaluation study for part of the Tamarac project also was completed. At Milwaukee, Wis., the two met with legal personnel of the Department for a discussion of acquisition matters. Mr. Cook also conferred with Carl B. Vogen at Minot, N. Dak., on the status and progress of various acquisition cases and on the preparation of a special tax evaluation study covering 6 counties and 45 townships in North Dakota that contain refuge projects.

Negotiates With Cottage Dwellers.--During February, Lester Corrie conducted preliminary negotiations for agreements with cottage owners and lessees on the Chautauqua Refuge project in Illinois that will permit them to reside on the project provided they agree to observe Bureau regulations. A majority of the persons consulted expressed willingness to sign agreements. On March 5, Mr. Corrie was assigned to the Squaw Creek Refuge area in Missouri, to assist in the preparation of evidence for a condemnation suit that was heard during the week of March 14. He then returned to continue his work on the Chautauqua project.

Works on Bombay Hook Tracts.--On March 28, Elmon Radway went to Upper Marlboro, Md., and to Dover and other points in Delaware to transact business connected with the acquisition of additional tracts for the Bombay Hook Refuge.

Attends Condemnation Hearing.--Carl B. Vogen, stationed at Minot, N. Dak., recently attended condemnation hearings at Grand Forks, N. Dak., on the Lower Souris Refuge Project.

Confers With Legal Officials.--Late in February, Albert J. Rissman, conferred with legal officials at St. Louis, Mo., and Jerseyville, Ill., on land acquisition matters, after which he left for Des Moines, Iowa, to confer with Bureau members there.

WILDLIFE REFUGES

Addresses Conservation Conference in Ontario.--W. F. Kubichek, in charge of the Section of Habitat Improvement, returned to Washington, March 21,

after addressing a district conservation conference sponsored by the Elgin Angling and Game Protective Association of St. Thomas, Ont., on March 18. Mr. Kubichek's remarks on the wildlife restoration program being carried on in the United States and the results obtained were well received by the Canadian authorities.

Good Run-off on Des Lacs Refuge.--Seth H. Low, manager of the Des Lacs and Lostwood Migratory Waterfowl Refuges, N. Dak., anticipates that the run-off on the former refuge this spring will be the largest since the dams were built in 1935. He reports that one thaw this year produced a run-off much larger than that of 1937, and that practically all the units of the refuge are now full, the water on some of them pouring over the spillways into others.

Count 78 Trumpeter Swans on Red Rock Refuge.--Archie V. Hull, manager of the Red Rock Lakes Migratory Waterfowl Refuge, Mont., reports that the number of trumpeter swans that remained on the area all winter increased from the 25 to 35, and that there were 78 on the first of March.

Waterfowl Flight Larger.--Mallards, pintails, and mergansers were the first ducks to arrive at the Valentine Migratory Waterfowl Refuge, Nebr., during the spring migration, reports Refuge Manager Ward M. Sharp. They arrived in large numbers on the last day of February. Green-winged teal arrived next followed by redheads, canvasbacks, shovelers, scaups, baldpates, buffleheads, gadwalls, and blue-winged teals. Pintails and mallards were by far the most abundant--it was estimated that 70 percent of the March flight was of these two species. Between March 12 and 15, 100,000 birds were estimated to be on the refuge, a number far larger than observed in March 1936 and 1937.

Precipitation on the refuge for March was above average. A total of 1.47 inches was recorded at the headquarters as compared with 0.65 inch for the same month in 1936. Water levels in all the lakes have risen, some of them 24 to 30 inches.

Water Conditions Good in North Dakota.--Recent reports indicate that the run-off from Canada into the Upper Souris River this spring has already provided about 25,000 acre-feet of water as compared with a total of 1,000 acre-feet last year. M. O. Steen, easement project administrator, reports that 31 of the 71 easement refuges in North Dakota have received sufficient run-off to reach spillway elevations, and that several others have enough water to carry them through the summer.

Reports Large Runoff.--More runoff was received in the lakes and ponds on the Medicine Lake Migratory Waterfowl Refuge, Mont., this spring than in any year since the establishment of the refuge, reports Refuge Manager Paul T. Kreager.

Increased Migratory Flight Reported.--According to ranchers in the vicinity of the Crescent Lake Migratory Waterfowl Refuge, Nebr., the migratory flight through this area this year is the largest in years, reports Refuge Manager Gilbert E. Wardwell. Almost all species of western ducks--canvas-

backs, mallards, scaups, gadwalls, redheads, green-winged teal, pintails, baldpates, mergansers, shovelers, and even a few goldeneyes and buffleheads--concentrated on the lakes of the refuge, as well as large numbers of snow geese and a few blue geese. Waterfowl began returning to the refuge on February 11, shortly after the ice on the lakes began to break up.

National Wildlife Week Observed by Scouts.--Gilbert E. Wardwell, manager of the Crescent Lake Migratory Waterfowl Refuge, Nebr., reports that during National Wildlife Restoration Week he invited a boy scout troop from Oshkosh to spend the week-end on the refuge. The scouts were shown the different birds on the lakes and the migratory habits of each were explained. The work being done to protect and increase the birds was discussed, as were facts about predatory animals and control methods. Beneficial hawks and owls were pointed out. The refuge system and how each refuge plays a part in conserving wildlife were also explained.

Reports Mergansers Abundant.--Chandler R. Young, manager of the Lacreek Migratory Waterfowl Refuge, S. Dak., reports that though the waterfowl flight this spring was not so large as last year, there are more American mergansers on the refuge than ever before. Redheads, mallards, and pintails also have been unusually abundant. The first birds to arrive came on February 27.

5,297 Birds Banded at Sand Lake.--Philip A. DuMont, manager of the Sand Lake Migratory Waterfowl Refuge, S. Dak., reports that 5,297 birds of 45 species were banded on the refuge during 1937.

Observe Canvasbacks on White River Refuge.--Robert H. Smith, assistant biologist at the White River Migratory Waterfowl Refuge, Ark., reports that on February 9, five canvasbacks were seen on the refuge -- the second time that this species has been known to occur there. He also reports that deer are becoming more abundant and that on Big Island, where these animals have not been seen for a number of years, there are signs of their reappearance.

More than 850,000 ducks were on the White River Refuge at the height of the winter season. This figure represents an increase of 21.5 percent over the number present last year. Outstanding increases were noted in pintail and green-winged teal populations. Approximately 1,500 Canada geese also used the refuge this winter.

N.Y.A. Boys Build Unique Bird Shelter.--From Roy N. Bach, easement project biologist stationed at Bismarck, N. Dak., comes the report that the National Youth Administration boys employed on the easement refuges in North Dakota have worked out a new and satisfactory type of game-bird shelter. Using blocks of snow about one foot square, placed loosely together, the boys formed a combination wind break and shelter that attracted many birds.

Reports Early Migration Records.--C. J. Henry, manager of the Lower Souris Migratory Waterfowl Refuge, N. Dak., reports that unusually warm weather during most of March resulted in some early migration records. The Canada goose was first seen on March 19 this year, 21 days earlier than last year. The mallard arrived 21 days earlier, the baldpate, 18 days, and the American merganser, 28 days earlier.

White-Fronted Goose Captured in Maryland.--A white-fronted goose captured by a farmer in the vicinity of the Blackwater Migratory Bird Refuge, Md., early in February, has been donated to the National Zoological Park, Washington, D. C. The farmer had seen the bird several times in company with Canada geese. David V. Black, manager of the refuge, and Harold S. Peters, of the Section of Distribution and Migration of Birds, made a trip to the farm and identified the goose, the occurrence of which in this part of the country is regarded as unusual.

Whistling Swan Stop at Montezuma.--Merton Radway, manager of the Montezuma Migratory Bird Refuge, N. Y., reports that on March 26, three whistling swans stopped on Black Lake, which will eventually become part of the refuge. He has been informed by local residents that spring migrating swans usually stop in a cove about 15 miles from the refuge, but that this is the first time in at least six years that they have appeared on Black Lake.

Rescue Deer on Ice.--C. G. Fairchild, manager of the Tule Lake Wildlife Refuge, Calif., in his recent quarterly report for this refuge and the nearby Upper Klamath, Lower Klamath, and Clear Lake Refuges, relates the rescue of a herd of deer from ice on the Tule Lake Refuge late in February. Two men, sent out to investigate reports of waterfowl frozen into the ice, came upon 26 deer, that had fallen and were unable to get up because of the slippery ice. Before nightfall 11 animals were dragged to the shore, where they quickly recovered and dashed away. The next morning the men found that all but three of those remaining had managed to leave. One of these was dead and the other 2 were brought to headquarters for treatment. Mr. Fairchild explained that deer commonly come down from the Lava Beds National Monument, which adjoins the south end of the refuge, but that he had never before seen them lying on the frozen lake. One buck upon being rescued rested a few minutes and then chased one of its rescuers down a dike and out onto the ice where it fell down and had to be dragged again to the shore.

Count Elk at Jackson Hole, Wyo.--A count of the elk in the southern Yellowstone herd wintering in Jackson Hole, Wyo, completed on April 1, showed a total of 17,370 animals, including 6,206 on the three refuge feeding grounds. The total number is 1,550 animals less than the count made in March 1936. Six Forest Service employees, two State wardens, Regional Director L. L. Laythe, Refuge Manager Almer P. Nelson, and other men engaged in feeding the elk made the count. Counts in outlying areas were made from airplane.

Feeding on the refuge was begun February 12, as some of the elk were beginning to leave. About 120 elk that were annoying ranchers near the Izaak Walton League addition to the refuge were driven on February 23, to the feeding

ground on the addition. About 25 tons of hay were consumed daily on the three feeding grounds.

Since the visit of Governor Miller, of Wyoming, and his party to the refuge in January, the number of visitors from outside points have been larger than in previous winters. The road that leads from a State highway to the headquarters has been kept open by the State Highway Department. During February the number of cars carrying visitors from Idaho, Utah, and Wyoming averaged about 45 each Sunday. Sleighs for feeding the elk also have been used to haul visitors over the feeding grounds, and on one Sunday the sleighs were kept busy until late in the afternoon. The elk were not disturbed.

Snowfall on the nearby mountains has been about normal, but on the refuge meadows near the headquarters it was not deep. During December and January when it snowed on higher levels it rained on the meadows. The mountain snow is expected to provide a flow of water in the streams this spring and summer that will be sufficient for irrigating the haylands.

Exchange Antelope and Elk.--Twelve antelope from near Roswell, N. Mex. donated by the New Mexico State Game Commission, arrived at the Wichita Mountains Wildlife Refuge, Okla., on March 12, and were released immediately in the big buffalo pasture. The animals stood the trip well, only one--a young buck--was not active. All have survived, however, and it is hoped that they will thrive on the refuge, where previous efforts to establish a herd have failed.

On March 24, Superintendent George E. Mushbach and Ranger W. E. Drummond, of the Wichita Refuge, took 12 elk by truck from the refuge herd to the Carson National Forest, N. Mex., as a gift to the State Game Commission in exchange for the antelope. Eleven of the animals were reported to be in fair condition when released, but one cow appeared to have suffered from the rough trip and may not survive.

Blizzard Hits Wichita Refuge.--The Wichita Mountains Wildlife Refuge, Okla., suffered a heavy frost on the night of April 1, and on April 7 and 8, an unprecedented April blizzard caused more damage. Prospects for a good mast crop are poor as the fruits and flowers on practically all the food-producing trees and shrubs were badly frozen. During the blizzard the temperature dropped below 26 degrees, and the high wind stripped flowers and fruit buds from the trees. Six inches of snow fell and in many places the drifts were 5 feet deep. The snow melted rapidly and by April 11, it had disappeared. Ranger William Earl Drummond said that the blizzard was the latest he had seen during the 37 years he has lived in the vicinity.

Wichita Refuge Donates Prairie Dogs to Indiana Zoo.--Fourteen prairie dogs 9 adults and 5 young, were shipped on April 6, from the Wichita Mountains Wildlife Refuge, Okla., to the Columbian Park Zoo, Lafayette, Ind. The animals were captured by flooding their homes after the use of snares and traps failed. E. J. Vaughn, superintendent of the Zoo, has informed the Bureau that they are attracting much attention. Earlier in the season a bull elk was shipped from the Fort Niobrara Game Preserve, Nebr., to the Indiana Zoo.

Montana Mountaineers Visit Bison Range.---Nearly 50 members of the Montana Mountaineers were shown the National Bison Range, Wyo., on April 3, by Dr. Robt. S. Norton, in charge of the range. The visitors saw the buffalo herd, deer and bighorns, and obtained a close-up view of the albino buffalo bull born in 1933.

Named Refuge Manager.---Joseph Clark Allen has been appointed refuge manager of the Desert Game Range, Nev., effective February 1, with headquarters at Las Vegas, Nev.

Howard A. Miller, associate refuge manager of the White River Migratory Waterfowl Refuge, Ark., has been acting in charge of the refuge since the transfer of H. W. Terhune to the Washington Office as chief of the Division of Construction and C. C. C. Operations.

Personnel Items.---Miss Pearl Gelbach was appointed a junior clerk-stenographer on March 16, to fill the vacancy created by the transfer of Mrs. Winifred Deering to the Division of Wildlife Research.

Harold J. Regan was appointed junior administrative assistant on April 1, to assist in the Bureau's W.P.A. activities.

Harry A. Bailey was appointed assistant refuge manager of the Back Bay Migratory Waterfowl Refuge, Va., on April 1.

Edward C. Knopp was transferred April 1, from the Trempealeau Migratory Waterfowl Refuge, Wis., to the Rice Lake Migratory Waterfowl Refuge, Minn.

William N. Anderson was appointed assistant clerk-stenographer on the Tule Lake Wildlife Refuge, Calif., on April 1.

The following have been appointed laborer-patrolmen on the Bureau's refuges: Henry Munkres, Squaw Creek Migratory Waterfowl Refuge, Mo., effective March 21; Joseph H. Broker, Tamarac Migratory Waterfowl Refuge, Minn., March 16; Milfred J. Smith, Chautauqua Migratory Waterfowl Refuge, Ill., April 1; Arthur R. Custer, Aransas Migratory Waterfowl Refuge, Tex., February 22; John H. Buckalew, Bombay Hook Migratory Waterfowl Refuge, Del., March 16; McCroy L. Coleman, Okefenokee Wildlife Refuge, Ga., March 16; and George F. Greene, Sacramento Migratory Waterfowl Refuge, Calif., February 1.

GAME MANAGEMENT

Takes Part in Radio Dialogue.---On March 27, Mr. Crouch participated in a radio dialogue "Wildlife Gangster" that was presented by the American Wildlife Institute over the Mutual Broadcasting System from Station WOL, at Washington. Events leading up to and including the sentencing of a Fort Worth club operator to a Federal penitentiary for selling wild ducks to his patrons were described in the broadcast.

Law Enforcement

Confers on Game Law Cases.---Early in April, F. P. Callaghan was in San Francisco and other California cities conferring with Federal attorneys and Bureau officials on pending game-law cases. He returned to Washington April 15.

Night Club Operator Gets Federal Term.--A night club operator near Fort Worth, Tex., who served his patrons wild ducks and other game birds, was sentenced on March 14, to serve 13 months in the Leavenworth penitentiary for conspiracy to violate the Migratory Bird Treaty Act. Five other persons also indicted on similar charges following an investigation of the club's activities received jail sentences of 30 days to 13 months, and all but one was placed on probation 3 years.

These convictions attracted national attention and many newspapers carried editorials complimenting Bureau agents and Texas officials who assisted in obtaining evidence. As a result of this cooperation between the officers a number of prosecutions have been filed in State court against persons who purchased ducks, doves, and plovers at the Fort Worth club. Twenty-three of the cases have been disposed of with fines and costs aggregating \$1,315, or an average of \$57 each.

Arrest Duck Sellers.--As a result of undercover investigations, 19 persons, recently arrested for selling wild ducks and geese in Arkansas, were required to furnish \$500 to \$1,000 bonds for appearance at the next term of Federal court. A total of 381 ducks, 5 geese, and 1 woodcock were allegedly sold by these persons during the past four months near Yoder, Marked Tree, Slovic Town, Manila, and Stuttgart, Ark. A large number of the sales were reported made by duck bootleggers. Another duck seller living across the State line in Missouri, near Steele, was arrested and furnished a \$1,000 bond.

Catch Quail Transporters.--Twelve residents of Mississippi unlawfully transporting quail to Tennessee have been apprehended in the Memphis area, charged with violating the Migratory Bird Treaty Act. They furnished bonds of \$250 to \$750 each.

The investigation also resulted in uncovering sales of quail by 22 other individuals in Arkansas, Mississippi, and Tennessee. All have been convicted in State courts. In Tennessee, 5 violators were fined an aggregate of \$117.50; 9 in Mississippi paid a total of \$279.30; in an Arkansas State court, two were fined \$92.05 each; one was placed on probation, two were given suspended fines of \$25 and \$100 each and three others were committed to jail in default of fines of \$50, \$142.50, and \$234.10 each.

Restaurant Operator Jailed.--A. Metairie, La., restaurant operator arraigned in Federal court at New Orleans, La. on March 11, pleaded guilty on 5 counts of an information, and on each of 4 counts of selling and unlawfully possessing wild ducks was sentenced to 30 days in jail, sentences suspended to run concurrently. The defendant was also given an additional 6 months sentence and put on probation 5 years on the additional count of poss-

essing wild ducks in close season.

On the same day another defendant appeared in the New Orleans court and was sentenced 30 days in jail for possessing a canvasback duck and 3 coots in close season. The defendant was also given a 6-month suspended jail sentence on another count. A defendant charged with killing 2 ducks in close season was sentenced to 30 days in jail, and on another count of possessing ducks in close season drew a 6-month suspended jail sentence and put on probation 5 years.

Pleading guilty to a charge of shipping 70 cardinals in interstate commerce and shipping and selling 120 live indigo buntings, a defendant was also sentenced on March 11, in the same court to serve 30 days in jail. Another defendant charged with possessing 2 mockingbirds and a live painted bunting was given a 6-month suspended jail sentence and put on probation 5 years.

Fur Buyer Sentenced.--For illegally transporting beaver pelts in interstate commerce, a fur buyer of Boise, Idaho, after being found guilty by a jury in Federal court at Carson City, Nev., of conspiracy to violate the Lacey act, was sentenced on March 4, to a year and a day in the penitentiary and fined \$500. Another defendant also found guilty on a similar charge was placed on probation. A verdict of not guilty was returned in the case of a third defendant, who, unable to furnish bond, had served 4 1/2 months in jail.

Possessed Waterfowl.--A fine of \$100 and costs of \$11 were imposed upon a man in State court in Jefferson County, Tex., on February 21, for possessing 5 lesser snow geese and 2 pintail ducks.

Hunted in Close Season.--Four residents of Hamburg, Iowa, discovered hunting wild ducks in Atchison County, Mo., on March 6, were arraigned in State court the following day and each given the choice of paying a fine of \$100 and cost of \$13.20, or serving 70 days in jail.

Trapper Sentenced.--A trapper who unlawfully entered the Upper Mississippi Wildlife and Fish Refuge on February 28 and was attempting to spear muskrats, pleaded guilty upon arraignment in Federal court at St. Paul, Minn., on March 5, and was sentenced to serve 30 days in jail.

Arrest Illegal Hunters.--A Federal agent and a State game warden patrolling a canal in Jefferson County, Tex., on March 15, discovered 3 men hunting wild ducks in a marsh. Twenty-three dead ducks and 2 geese were seized and the hunters arrested and arraigned before a Federal commissioner the same day. In default of \$500 bonds they were remanded to jail.

Transported Antelope Illegally.--Evidence of illegal transportation of antelope from Wyoming into Nebraska during January was obtained by Federal agents and State wardens. The offender was taken into a Nebraska State court and fined \$50 and costs of \$5.

Fined \$300.--Charged with hunting in close season and possessing ruddy ducks and parts of a sora and woodpeckers a hunter was arraigned in Federal court at Sacramento, Calif., on March 15, and fined \$300 and sentenced to serve 30 days in jail. Information obtained by a State warden and his assistant led to the hunter's arrest.

Assaulted Deputy Game Warden.--A Federal deputy game warden patrolling an area near the Blackbeard Island Refuge, Ga., was assaulted on January 1 by a trapper. Arraigned in State court the trapper was sentenced to 12 months in a State prison.

Dove Hunter Punished.--A fine of \$200 and cost of \$24 were meted out to a hunter when he pleaded guilty on April 4, in Federal court at Memphis, Tenn., to a charge of taking mourning doves by means of bait.

Involved in Fox Theft.--Cooperation by a Federal agent in Ohio enabled Michigan State police to complete a case against 3 men charged with the theft of live silver foxes. One defendant was sentenced 6 months to 5 years in State prison, and the others placed on probation 2 years.

Pays \$200 Fine.--A fine of \$200 and \$7 costs were paid by a violator in a State court for trapping wild ducks in close season on February 10, in Alexander County, Ill.

Oregon Hunter Punished.--A hunter charged with killing and possessing wild ducks on Sauvie Island, Oreg., on February 8, pleaded guilty in State court on February 10, and was fined \$50 and sentenced to jail 30 days. His shotgun also was confiscated.

Hunted Out of Season.--Two persons, who hunted waterfowl in Currituck County, N. C., on February 22 and on March 11, respectively appeared in Federal court at Elizabeth City on March 28. One was fined \$50 and the other sentenced to 30 days in jail.

Sentence for Assaulting Officer.--Three of the four Illinois hunters charged with assaulting a Bureau officer were found guilty on April 18, in Federal court for the Southern District of Illinois, and sentenced to serve 6 months each in jail. The other defendant will be arraigned at an early date.

Baited Doves and Ducks.--Thirty-three cases of taking mourning doves by means of bait during December, 1937 and January, 1938, obtained by a State and Federal deputy game warden, have been handled in State courts in South Carolina and fines ranging from \$10 to \$50 and aggregating \$761 were assessed.

Nine other persons who hunted waterfowl in South Carolina by means of bait during the open season and were apprehended by an agent and a State and Federal deputy game warden forfeited \$50 each.

Excess Limit of Ducks Brings Penalty.--Entering a plea of guilty to possessing 91 ducks in open season, a defendant in Federal Court at San Francisco, Calif., on April 16 was fined \$300 and sentenced to serve 60 days in jail.

Bird Shippers Sentenced.--Three persons arraigned in Federal court at New Orleans, La., on February 11, and charged with illegally shipping live buntings and other birds to different States, entered pleas of guilty. One was sentenced to 30 days in jail, the others to 20 days each.

Four other persons who appeared at the same time pleaded guilty to trapping 8 painted buntings. As there was no evidence of commercialization, the men received suspended jail sentences of 4 months each and were placed on probation 5 years.

Raided Robin Roosts.--Cases against 5 persons who hunted robins in Montgomery County, N. C., on February 27, were disposed of in Federal court at Rockingham, N. C. on March 7. One hunter was sent to jail for 60 days; another for 30 days; two were fined \$75 each and placed on probation 1 year and one was put on probation 2 years. Five other persons were apprehended during March raiding robin roosts in Gaston County, N. C. Pleas of guilty were entered by four when arraigned in Federal court on March 21, at which time the judge imposed suspended jail sentences of 30 days each and placed the defendants on probation 1 year. The other defendant was fined \$5 the next day. These cases resulted from county and deputy game protectors cooperating with a Bureau agent.

Importations

Confiscate Illegal Importations.--Several attempted illegal importations of migratory birds, including painted buntings and grosbeaks, from Mexico, Cuba, and Central America, were recently intercepted at New York City, New Orleans, La. and Los Angeles, Calif. The birds which were confiscated by representatives of the Bureau at these ports, were donated to the Zoological Park at New York City, the Audubon Park Zoo at New Orleans, and the Griffith Park Zoo at Los Angeles.

Interesting Recent Importations.--Among the more interesting birds and mammals recently imported were 2 Peruvian parakeets (Forpus c. coelestis), from Peru; 41 orange-winged parakeets (Brotogeris pyrrhopterus), from Ecuador; 8 blue-footed boobies (Sula cyanops), from Isabel Island, Mexico; 2 pygmy marmosets (Hapale pygmaea) and 3 spectacled bears (Tremartos ornatus), from Ecuador; and one owl monkey (Aotus trivirgatus), shipped from Panama.

Alaska Game Law Administration

Executive Officer in Washington.--Frank Dufresne, executive officer of the Alaska Game Commission arrived in Washington on March 28, for conferences with Bureau officials on various Commission problems, proposed amendments to the Alaska game law, and funds for the Commission. He left Washington on April 9, and on his return trip to Alaska went by the way of Albuquerque, N. Mex., Los Angeles and San Francisco, Calif., and Portland, Oreg.

Alaska Game Commission Has Flying Warden.--Recently a popular magazine carried an article declaring that a State game warden of Maine was the first in the nation "to take to the air" in the enforcement of game laws. Maine conservation officials began to use an airplane in 1937, but the Alaska Game Commission has a warden who has been "flying down" violators since 1930. He is Sam White, with headquarters at Fairbanks.

On January 17, the Alaska Game Commission chartered a new airplane for Warden White, and shortly after he apprehended a troublesome alien trapping illegally in the birches area on the Yukon River. Warden White and his flight mechanic first flew to the cabin of the alien, where he and Warden Collins had seized a number of illegal guns from the trapper the previous spring. From the air, however, it could be seen that the cabin was unoccupied.

White then spotted a recently built cabin about 8 miles up the river, and landed 6 miles farther up the river as landing near the cabin was too dangerous. As it was too late that night to reach the cabin the two men camped in a tent with the temperature 40 degrees below zero. Next morning Warden White walked to the cabin, but found it occupied by a native family, who informed him that the alien was camped in a cabin on the other side of the river. By the time the warden returned to the airplane it was too late to take off. The next morning he and his mechanic soon spotted the cabin from the air and landed near it. The warden rushed to the cabin and found the alien skinning a fox taken illegally. He then seized skins of 13 red foxes, 1 cross fox, 4 lynxes, 2 coyotes, 1 mink, 1 muskrat, and 4 ermines, and 2 rifles. By the time the warden's investigation was completed it was again too late to take off, and the pair spent the night with the trapper. As the trapper had a dog team and his traps were still out he was ordered to take up the traps and report to the United States Commissioner at Tanana within a week. Warden White then flew to Tanana and arranged for the trapper's trial. He was fined \$100 and his furs and guns forfeited.

By using an airplane the warden was able to apprehend this violator within a few days, whereas the use of a dog team would have taken weeks. On a patrol trip made in the "dead of winter" in an airplane, Warden White and Deputy Warden Benson arrested 2 habitual game-law violators in the Upper Tonzona Basis east of McGrath. The Commission regards the conviction of the two violators as highly important, as it was generally believed that the wardens could not reach this isolated area in winter.

Alaska Game Law Violations.--For the quarter ended March 31, 95 violations of the Alaska Game Law were reported. In 23 cases aliens were involved, in 66 citizens, and 6 cases of technical violations involved the accidental taking of furbearing animals, the skins of which were surrendered to the Commission. The fines for violations of the Alaska Game Law for the quarter aggregated \$3,700 and jail sentences 1,530 days. A total of 71 firearms, 276 furs of various species, 18 big-game animals, 1 beaver skin coat, 1 marten neckpiece, 194 traps, and 2 bottles of strychnine were seized. The valuable beaver skin coat made from contraband Alaska furs was seized in the Seattle district by Deputy Alaska Game Warden Sellevold and Game Management Agent Webster H. Ransom and returned to Alaska. The furrier who handled the skins was prosecuted in a Washington State Court and fined \$100.

New Wildlife Agent Badges Adopted.--The Commission at its meeting in February adopted a new form of warden badge similar to that of game management agents. The present title "Alaska Game Warden" will be replaced by "Wildlife Agent". Solicitations for bids for furnishing the new gold badges, which will bear the brown bear shield of the Alaska Game Commission, are being prepared.

Activities in Warden Districts.--During the absence of Warden Gray, who was on annual leave from January 1 to February 17, Wardens Rhode, Sarber, and Selfridge conducted extensive patrols in District 1, Juneau, and obtained convictions in 5 cases involving illegal feeding of deer meat to foxes.

In District 2, Petersburg, two similar cases in southeastern Alaska resulted in one case in a fine of \$200 and in the other a \$50 fine and 60 days in jail.

Warden Selfridge, of District 3, Ketchikan, made several post-trapping season patrols aboard the Grizzly Bear. His outstanding case was the arrest and conviction of a fur dealer at Klawock for falsification of records. The dealer, who had obtained the names and license numbers of several native trappers and used them to cover up his purchases of illegal furs, was fined \$200.

Warden Rhode arrived at Cordova, headquarters for District 4, on January 21, and after organizing his office patrolled the areas near Cordova, Prince William Sound, and Valdez. Information that he obtained on pending naturalization cases from court records at Valdez was forwarded to the executive office. An alien in illegal possession of 31 firearms was apprehended and the guns seized.

During March, Warden Rhode made two patrol trips by airplane and dog team into the Chisana, Nabesna, and Bremner River sections and arrested 9 trappers, including 7 aliens, who were operating illegally. On these trips, he also obtained information on fraudulent claims made to the Territory for the payment of wolf and coyote bounties. One fur dealer was fined \$100 on a game law charge and \$150 and costs of \$150 on a Lacey Act charge involving illegal transportation of coyote skins from Canada for bounty. He was also required to refund \$800 to the Territory for the illegal bounty payments.

In District 5, Seward, Warden Gallwas made a routine dog-team patrol of the Kanai district in January to investigate fur conditions. Two trappers caught taking muskrats in close season under protection of coyote trapping permits were given jail sentences. During February, Warden Gallwas made a trip to Kodiak to assist in the completion of warden headquarters being built with C. C. C. help of the Forest Service. Except for inside finishing the new headquarters are practically complete.

All of District 6, Unalaska-Kodiak, was patrolled by Warden Gallwas and Deputy Warden Norman J. Benson. An alien arrested trapping before the season opened was fined \$150 and forfeited 17 red fox skins, 17 mink skins, and a rifle. In addition, he was required to buy a \$100 special alien license, which was then voided by the court.

Deputy Warden Benson, who had been assisting Warden Gallwas in a winter patrol of the Alaska Peninsula, was called to the Juneau headquarters for training in office and other procedure. He was in Juneau, from January 11 to February

18, after which he left for Cordova and from there went by airplane to his station at McGrath, headquarters for District 7, on March 7. Soon afterward and accompanied by Warden White in a chartered plane, he made a patrol trip into the Upper Tonzona Basin, where they arrested D. E. Block and R. W. Duncan, owners of an illegal trapping line. The wardens liberated a mink and a marten and seized 3 marten and 3 beaver skins. In court the violators admitted feeding 18 dogs on moose meat and indiscriminately killing moose. One cow and an unborn calf were seized and used as evidence. Parts of moose had been scattered along a trail where the dogs had been fed. Duncan testified that he had killed 5 animals. The two men were sentenced to 6 months on each one of two counts of illegal trapping and killing moose, the sentences to be served consecutively. A charge against Duncan of possessing poison in violation of the Alaska Game Law will be taken up later. Both men also admitted driving Stony Indians from the trap line by armed force.

Warden O'Connor, of District 9, Anchorage, spent most of January and the first half of February at Kenai assisting in construction of warden headquarters.

From February 19 to 22, Warden O'Connor represented the Commission at the Fur Rendezvous held in Anchorage, where 25 lots of seized furs were sent from Juneau for display in the Game Commission booth. On the last day of the rendezvous the furs were offered for sale at public auction and netted \$1,627.50.

Warden Collins, of District 14, Nome, brought about the arrest of a fur dealer at Selawik, who was convicted on two counts involving falsification of records and fined \$500. He also made a patrol trip covering the Candle and Shishmaref areas.

Demonstrates Wolf Control.---Frank Glaser, employed by the Biological Survey in cooperation with the Territory of Alaska, has been demonstrating predatory-animal trapping in the vicinity of Anchorage, Palmer, Matanuska, Seward, and Kenai. He recently returned to Fairbanks, after which he left for the White Mountain area.

PREDATOR AND RODENT CONTROL

Results of Mexican Expedition Reported.---Three new forms of rodents were collected on the expedition led to the Carmen Mountains, Coahuila, Mexico, by Mr. Young in September 1937. Described by E. A. Goldman, the new forms include a subspecies of chipmunk, a species of pocket gopher, and a subspecies of wood rat. The pocket gopher was named Thomomys sturgisi for R. S. Sturgis, member of the expedition who collected the specimen. Reptile specimens taken included the rare Baird rat snake. The range limits of another reptile were extended, when the expedition took a specimen of a rattlesnake identified by L. M. Klauber, of the San Diego Society of Natural History. The snake was taken in the Carmen Mountains at an altitude of 6,200 feet. The main objective of the expedition was wildlife photography. Mountain lions were lured by catnip oil into taking their own pictures with flashes at night. Mr. Young has had enlarged prints made of these and also of bobcat and deer pictures obtained with sets intended for the mountain lions.

Enlarge Pocatello Supply Depot.--An addition for storing grain and other supplies used in making bait for rodent and predator control is being built to the Bureau's supply depot at Pocatello, Idaho. Brick is being used with the help of W. P. A. labor in building the one-story 160 by 65 foot addition, which is expected to be completed by next fall.

The supply depot, established in 1927 at McCammon, Idaho, was moved into rented quarters at Pocatello in 1932. Purchase of the present site and building, construction of the addition, and purchase and installation of necessary machinery were authorized by Congress in June 1936.

Enlargement of the depot also makes it possible to improve the bait-mixing facilities, the laboratory, and office quarters, and assembling equipment used in cooperative control operations. Research dealing with the mechanical processing of toxic materials will also be conducted at the depot when the addition is completed, as it is planned to move part of the equipment there from the Bureau's laboratory at Denver, Colo.

Construction of the addition, which also includes a railroad loading platform, is being supervised by Paul T. Quick, in charge of the supply depot, assisted by Paul G. Hirschler, Bureau construction engineer. Plans and specifications for the addition and other improvements were drawn by the Division of Construction and C. C. C. Operations.

Catch 50 Wolves in Alaskan Predator Control.--Fifty wolves and 6 coyotes were taken in recent months in Alaska by C. C. C. enrollees under supervision of the Forest Service. Sixteen wolves were taken at Shungnak, 21 at Kiana, 5 wolves and 6 coyotes at Noatak, 4 wolves at Pointhope, and 4 wolves at Kivalina. The Bureau and the Game Commission cooperated in this project by giving instructions in the setting of traps and supply scent material.

Trap-Pan Springs Successful.--Trap-pan springs have been found useful in keeping other animals out of traps set for predators, according to District Agent Louis Knowles, of the Dakota District. One hunter, who moved into a skunk area during the previous fiscal year, caught six of these animals in coyote sets that he had prepared without trap-pan springs. Springs were then supplied the hunter and no more skunks were caught, although they continued to be abundant in the trapping area during the winter. This fiscal year, reports Mr. Knowles, no skunks have been trapped by the four hunters employed in skunk areas and the catch of various small mammals in traps has become negligible. Rabbits also are abundant in the district, but are not being caught in the predator traps.

Pocket Gophers Cause Dam Washout.--Investigations of the washout last July 11, of the Kyle Dam on the South Dakota Pine Ridge Indian Reservation, show that pocket gophers were responsible for the damage, reports District Agent Louis Knowles. Repairs to the dam, which originally cost \$48,000, will probably amount to \$25,000. The washout followed a leak that developed in a natural hill of earth supporting the concrete spillway. After the water had cut through it was found that the earth was honeycombed 7 feet deep with pocket gopher burrows. Investigators expressed the belief that these had been dug before the dam had been built and that the hill was used by the rodents as a storage place for winter food.

Wolves Taken in Saline County, Mo.--District Agent A. E. Gray, of the Oklahoma-Kansas-Arkansas-Missouri District, reports that Hunter W. E. Smith took 64 wolves in Saline County, Mo., during the 11-month period ended November 30. Since then Hunter Smith has been transferred to Carroll County, Ark., to control wolf depredations there.

Rats Eat Paste in Steam Pipe Insulation.--Samples of soybean flour paste that was used to seal canvas linings on steam pipes in the new Federal Building at San Antonio, Tex., were found to be attracting rats and offering tempting food to the rodents. The paste, sent by District Agent C. R. Landon to the Control Methods Research Laboratory, Denver, Colo., was readily eaten by rats kept for experimental purposes. The firm that furnished the paste was surprised to learn this as it was under the impression that a form of blue stone used in the manufacture of the paste would repel rats. Meantime, a number of traps have been placed on several floors in the new Federal Building in an attempt to eliminate the rodents.

Mountain Lions Shipped Safely.--District Agent R. Scott Zimmerman, of the Utah District, reports that three mountain lion kittens taken west of Kanosh, Utah, and shipped to the museum at Grand Rapids, Mich., were kept alive during the journey by feeding them condensed milk. The animals will be kept until they attain a sufficient size for use in completing a mounted family group of this species at the museum.

Coyotes Tracked in Soft Snow.--Several predator hunters using saddle horses and a pack of dogs ran down and killed 12 coyotes the past winter in the Wyoming District by tracking them in soft snow. Among the animals killed were 2 with peg-legs and 2 yearlings. One of the peg-legged animals, a female, had been running on Phosphate Mountain, within a mile of Cokeville, Wyo., for the past four years. She had eluded capture, although a number of her pups had been taken several times. District Agent Adolph S. Hamm, reports that local stockmen who have become interested in this method of control, plan to have a number of horses ready next winter for tracking the coyotes when soft snow falls.

Damage Wheat Crop.--Jack rabbit damage to wheat fields in Wyoming has been estimated as high as 50 percent in some strips and 75 to 85 percent in others. In one field the rabbits had eaten the wheat to the root collar and dug the soil away from the plants. In many fields high winds have blown away 2 or 3 inches of top soil, leaving the wheat roots exposed. One farmer estimated that the rabbit damage to his wheat crop exceeded \$1,000 last year as he had to replace the fall planting with spring wheat. Though probably too late to be of help in saving this year's crop, control methods were demonstrated to this farmer by men working under District Agent Hamm.

Checks Orchards for Mouse Damage.--Robert Issac, an agent of the Bureau stationed in Connecticut, reports that he has checked 53 orchards, containing 136,800 trees, in a survey of mouse damage. He found that at least 15 to 20 percent of the apple trees have been so badly damaged as to be of no commercial

value. This is a conservative figure, explains Mr. Isaac, as the extent of root damage by pine mice could not be determined. At a meeting of fruit growers held at Morris, Conn., in January under the auspices of the Litchfield County Farm and Home Institute, Mr. Isaac demonstrated the use of rodent-control bait in connection with mulching practices. He also reports that the Bureau has been asked to help in the control of pine and deer mice in heavily wooded areas of the State where ginseng is raised.

Pocket Gophers Figure in Oil Dam Break.--Approximately 63,000 barrels of oil stored in a surface tank at Gladewater, Gregg County, Tex., were released recently into the Sabine River when flood waters entered pocket gopher runways in the oil tank dam, reports District Agent C. R. Landon, of the Texas District. Mr. Landon adds that the State Highway Department is clearing highways of pocket gophers, and that more than a ton of poison grain was used in February in this work by the district highway office at Tyler. This practice, it is pointed out, not only saves the highways but also helps the farmers living along the highways in controlling rodents on their farms.

Migrating Wolf Pack Trapped.--Eight wolves that migrated from Mexico into New Mexico during December and January have been taken by Bureau hunters, according to District Agent E. M. Mercer, of the Arizona District. Late in January three of the wolves were taken in as many days by Hunter W. C. Echols, after which the remaining animals migrated from the Animas Mountains in New Mexico to the Peloncilla Mountains in southeastern Arizona. Hunter Glenn Taylor, of the Arizona District, was assigned to trap them, but before he could get all his traps working the pack left again to return to the Animas Mountains. Three more of the pack were taken in New Mexico in February by Hunter Echols, leaving only one large male and a young female of the eight that were first observed. The two animals returned to Arizona and on March 12, Hunter Taylor trapped the male and on March 17, the female. The male was reported to be over 6 feet long. Its skin and skull are being added to the Bureau's collection.

Coyote Extends Range.--The Michigan Commission of Conservation reports that a coyote was recently shot 10 miles east of Mason in Ingham County, which as far as known is 50 to 75 miles farther south than the present range of these animals in that State.

Retain Trappers.--As the proposed reduction from four to two in the number of trappers in McMullen County, Tex., was opposed in a petition signed by 132 persons, of whom 50 were women, the work of the four men is being continued. The county commissioners had previously set aside funds to pay \$60 monthly for each of the four trappers, but in an effort to reduce monthly expenditures in this work it was proposed to employ only two. Shortly after the proposal became known the petition was presented. A similar attempt to reduce costs in Parker County by temporarily laying off the trapper resulted in a protest from County Judge T. R. Ervin, who described the trapper as "the most valuable man employed

in the county." It was likewise decided to continue the work and effect the necessary economies in other areas.

Catches Lions in Mexico.--Although his dogs were handicapped by snow and ice, Hunter Ira Wood while on leave during January caught four mountain lions in the high areas of the Carmen Mountains in Mexico. Since then he has returned to the King Ranch in Texas, where he is taking bobcats in order to reduce their depredations among quail, wild turkeys, and other forms of wildlife.

Traps 7 Wolves in 6 Days.--During the first 6 days after being assigned in January to a ranch in Calhoun County, Tex., Hunter L. T. Burchfield trapped 7 wolves. On March 19, he was transferred to Mississippi to assist the Game and Fish Commission in predator control in that State.

Grain-Mixing Plant Busy.--A total of 146,400 pounds of grain bait for use in cooperative rodent control work in Texas was prepared the past three months at the Bureau's mixing plant at Lubbock, Tex. During February, 73,000 pounds were mixed and 64,667 pounds shipped to cooperators. The bait is prepared at cost for the cooperators in the Texas district and is now selling at \$5 per 100 pounds, f.o.b.

Pair Lose Fight in Bounty Case.--A case involving fraudulent claims for coyote bounty in South Dakota, which has been pending 2 years, was recently disposed of with the two defendants, one an Indian, being sent to prison to serve 4 year terms for perjury. The pair was convicted in 1936, but appealed to higher courts. An investigation by the State Game and Fish Department and the attorney general's office disclosed that the two men had put in bounty claims for about half of the \$7,000 paid in Dewey County in 1935.

Rabies Outbreak in Washington.--District Agent John Finley, of the Washington District, reports that the outbreak of rabies among dogs this spring is worse than for several years. The State has placed a quarantine on dogs in Grant and Douglas Counties. Thus far no reports have been received by Mr. Finley of the disease occurring in coyotes or other wild animals.

CONSTRUCTION AND C. C. C. OPERATIONS

Inspect Mattamuskeet Refuge.--On February 4, Mr. Terhune, accompanied by Robert Fechner, Director of the C. C. C., and Fred Morrell and L. C. Stockdale, of the Forest Service, visited Mattamuskeet Refuge, N. C., where they conferred with Dr. Gabrielson, James D. LeCron, of the Secretary's Office, and Regional Director James Silver. Mr. Fechner enjoyed the sight of the large numbers of geese and swans resting on the refuge. The party returned to Washington on February 6.

Inspect Camps.--During March, Mr. Terhune and John F. McInnis spent several days inspecting C. C. C. camps in Region 7, Southeastern. Leaving Washington on March 20, they first stopped at the Savannah River Refuge, S. C., and the Okefenokee Refuge, Ga. Mr. McInnis remained at the latter refuge while

Mr. Terhune went on to Camp BF-1 at the St. Marks Refuge, Fla., after which he returned to the Savannah River Refuge and was joined by Mr. McInnis. The two then went to the Bull Island unit of Cape Romain Refuge, S. C., and to the Mattamuskeet Refuge, N. C., and returned to Washington on March 29.

Regional C.C.C. Inspectors Conference.--A conference of regional C.C.C. inspectors was held in the Washington office from February 18 to February 26. Those present were Millard I. Frost, of the Atlanta office, Arthur F. Miller, of the Omaha office, O. W. Teckemeyer, of the Des Moines office, and Wilfred J. Gregson, of the Portland office.

Observe C.C.C. Anniversary.--Members of the Bureau who attended the C. C. C. banquet held in Washington, April 5, in connection with the fifth anniversary celebration of the agency, included Dr. Gabrielson, Associate Chief Henderson, Mr. Dillon, Mr. Terhune, Dr. L. C. Morley, P. S. Munk Pedersen, R. O. Gustafson, Lillian Feldhake, Maxine Glanville, E. J. Parlato, and W. W. Kelley. C. C. C. camps throughout the country held "open house" programs during the week for residents of nearby communities. Radio talks were given wherever possible and newspaper articles prepared under the direction of the Bureau on camp activities were published in many local newspapers.

Add Two C. C. C. Camps.--The Bureau will have two new C.C.C. camps in operation during the eleventh camp period, April 1 to September 30. Bombay Hook Camp BF-1 already has been established at the Bombay Hook Refuge, near Leipsic, Del., to carry out a program of dike construction. Kenneth Jacobson, formerly employed in the Washington office, will be camp superintendent.

Back Bay Camp BF-1, the second camp, was scheduled to arrive on April 12, at the Back Bay Refuge, Pungo, Va. Its work will consist mainly of sand fence construction. Neil MacDougall, who was superintendent of the Lacreek Camp BF-3, S. Dak., has been assigned to the camp as chief foreman. P. S. Munk Pedersen and Regional Director James Silver spent two days early in February in selecting the camp site.

Arrowwood Camp BF-2, N. Dak., Panther Creek Camp BF-2, Okla., and White River Camp BF-2, Ark., originally scheduled for abandonment on April 1, will be continued until May 31, to complete work on the Arrowwood, Wichita, and White River Refuges. Other tenth-period camps of the Bureau will continue through the eleventh period.

Visits Montezuma Refuge.--R. O. Gustafson spent several days at Montezuma Refuge Camp BF-2, N. Y., early in April, checking equipment needed for the eleventh period work program.

Chief Foremen Resign.--L. D. Longley, camp chief foreman at Arrowwood Camp BF-2, N. Dak., and Walter W. Sauer, camp chief foreman at Camp Seney Camp BF-1, Mich., have resigned.

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GENERAL NOTES

Inspects Bureau Activities in West.—Dr. Gabrielson addressed a number of sportsmen's organizations on waterfowl conservation, conferred with Survey officials in the field, and inspected several waterfowl refuges during his western field trip from May 18 to June 8. At Denver, Colo., and Omaha, Nebr., he conferred with regional directors, and at Helena, Mont., he met with the Montana Fish and Game Commission, which is considering plans for the development of a system of migratory game-bird refuges in the State. He also addressed several Montana sportsmen's groups.

Accompanied by Regional Director Burnie Maurek and his assistant, Milton Furness, of Region 9, and M. O. Steen, of Bismarck, N. Dak., easement project administrator, the Chief visited the Upper Souris Migratory Waterfowl Refuge, N. Dak., and expressed satisfaction with its development since the refuge was established in 1935. He also observed that other refuges and marshes in the State had benefited greatly from increased precipitation last winter and this spring. After leaving North Dakota, he inspected part of the Upper Mississippi River Wildlife and Fish Refuge, addressed a well-attended meeting of sportsmen at Peoria, Ill., on the waterfowl situation, and conferred at New York City with sportsmen and conservationists.

Confer With Game Commissioners on Federal Aid.—During the past few months Chief Gabrielson and Albert M. Day conferred with game commissioners of each of the 48 States and explained the procedure that will be followed in administering the Federal Aid to Wildlife Restoration Act. At Omaha, Nebr., on June 9, Mr. Day spoke on "How We Interpret the Pittman-Robertson Act" at a meeting of game officials of Minnesota, Wisconsin, Iowa, North Dakota, South Dakota, and Nebraska.

The act was discussed further with game commissioners attending the annual conventions of the International Association of Game, Fish, and Conservation Commissioners and the American Fisheries Society at Asheville, N. C., June 20 to 25. Proposed waterfowl regulations and other Bureau wildlife-conservation activities also were discussed. At this meeting the 9 regional directors in the United States and other Bureau members also were in attendance. Before going to Asheville, the regional directors stopped at the Washington Office on June 16 and 17 for conferences on policies to be followed in administering the Federal aid program, proposed waterfowl regulations, and other Bureau activities within their respective regions.

Federal-Aid Program Being Developed.—The Agricultural Supply Bill, providing appropriations for the fiscal year 1939, includes an appropriation of \$1,000,000 for cooperation with the States in developing a wildlife-restoration program under the provisions of the Pittman-Robertson Act. This

legislation provides that each participating State must assent to its provisions and must, in addition, include a prohibition against the diversion of hunting-license fees for any other purpose than the administration of the State fish and game department.

Rhode Island, New York, New Jersey, Virginia, South Carolina, Kentucky, and Kansas have already adopted legislation assenting to provisions of the act and making needed changes in State laws to permit participation. Governors of 31 other States have formally assented, pending legislative approval by the next session of the State legislatures. These States include Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Indiana, Iowa, Maine, Maryland, Michigan, Minnesota, Montana, Nebraska, New Hampshire, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Utah, Vermont, Washington, Wisconsin, and Wyoming. It is anticipated that work will be begun shortly after July 1, as many States now have definite ideas regarding projects to be undertaken as soon as funds are available. From indications thus far, the program will largely benefit upland species. Some interest has also been shown in projects to better the fur resources.

Visit Maryland Waterfowl Areas.--On May 9, Dr. Gabrielson and Dr. Clarence Cottam inspected the Susquehanna Flats, shore land of the Aberdeen proving grounds of the War Department, and other nearby Chesapeake Bay waterfowl areas. They covered much of the territory in an army airplane, which was made available to them at the Aberdeen proving grounds.

Commission Approves Purchase of Refuge Lands.--The Migratory Bird Conservation Commission has approved the acquisition by the Bureau of 9,895 acres in 14 wildlife refuges at a total cost of \$84,884. The lands, which are within the exterior boundaries of refuges already established and are regarded as necessary to round out the refuges and facilitate administration, are on the following refuges: White River Migratory Waterfowl Refuge, Ark.; Turnbull Migratory Waterfowl Refuge, Wash.; Swan Lake Migratory Waterfowl Refuge, Mo.; Elk Refuge, Wyo.; Seney Migratory Waterfowl Refuge, Mich.; Delta Migratory Waterfowl Refuge, La.; Mooschorn Migratory Bird Refuge, Maine; Upper Souris Migratory Waterfowl Refuge, N. Dak.; Bombay Hook Migratory Waterfowl Refuge, Del.; Tamarac Migratory Waterfowl Refuge, Minn.; Charles Sheldon Antelope Refuge, Nev.; Bear River Migratory Bird Refuge, Utah; Valentine Migratory Waterfowl Refuge, Nebr.; and Hart Mountain Antelope Refuge, Oreg. Members of the commission attending the meeting held in the office of Chief Gabrielson on June 14 were Secretary of Agriculture Wallace, chairman; Oscar L. Chapman, assistant secretary of the Department of Interior, representing Secretary Ickes; Glen C. Leach, of the U. S. Bureau of Fisheries, representing Secretary of Commerce Roper; and Representative Sam D. McReynolds, of Tennessee.

Locke Named Regional Director.--S. B. Locke, for more than 6 years conservation director of the Izaak Walton League of America, assumed his duties as regional director of Region 8, Northeastern, on May 16. States

in the region include the New England States, New York, New Jersey, Pennsylvania, and Delaware. Bertrand E. Smith, former regional director, is continuing as assistant director of the region.

Plans are to move the headquarters for the region to Boston, Mass., a more central location. Meantime, the regional director's address is 309 Federal Building, Portland, Maine.

Mr. Locke, a native of West Paris, Maine, and a graduate of the University of Maine, was previously employed by the Biological Survey, going from the Survey to the Izaak Walton League in 1931. He transferred to the Biological Survey from the Forest Service in 1930, where he had served in various capacities for more than 20 years.

Confer With State Game Officials.--On May 10, A. M. Day, F. C. Lincoln, and W. E. Crouch attended a conference of game officials of New York, New Jersey, Delaware, and Pennsylvania at New York City. Mr. Day discussed the provisions of the Pittman-Robertson Act, explaining rules, regulations, and policies to be adopted by the Bureau for its administration. Mr. Lincoln spoke briefly on the waterfowl situation, and Mr. Crouch on cooperative game law enforcement. During the morning session on fisheries, mosquito-control activities were discussed and the Bureau's recommendations on the matter endorsed.

Mr. Morrison Dies.--Lisle Morrison, who until his retirement two years ago was in charge of the Bureau's exhibit work, died on May 22, at his home in Takoma Park, Md. During the last 14 years of his Government service, he developed an extensive series of wildlife-conservation exhibits, and following his retirement continued to serve the Bureau as a collaborator.

"Mr. Morrison's death is a great shock and means a great loss to the Biological Survey, both personally and officially," said Associate Chief Henderson. "As a helper and adviser in preparing and conducting educational exhibits on wildlife conservation he had been active almost to the date of his death, his last visit to the Bureau's office having been on May 20."

Mr. Morrison was retired February 29, 1936, after 40 years of Federal service, the last 17 in the Biological Survey. He was born in Ireland on February 26, 1866, and came to America at the age of 19. Entering the War Department on September 16, 1895, he served in the Quartermaster's Department until his transfer to the Department of Agriculture on January 2, 1904. He was with the Department continuously except for three years that he was connected with a seed-growing concern on the Pacific coast. At one time Mr. Morrison had charge of the office of congressional seed distribution, and later was in charge of dry-land seed distribution. He came to the Biological Survey from the Office of Land Management, where he had been assistant to the Chief. During his early years in the Survey Mr. Morrison was assistant to the chief of the Division of Economic Investigations, the unit then in charge of predator and rodent control. Later he was in charge, not only of exhibits, but also of the Bureau's photographic work and the distribution of publications.

In 1930 Mr. Morrison was one of the Department of Agriculture representatives at the International Fur Trade Exhibition in Leipzig, Germany, and conducted a conservation exhibit there. Since his retirement he had conducted exhibits for the Bureau in Baltimore, Hagerstown, Philadelphia, and Richmond. At the recent North American Sports, Garden, and Outdoor Life Show in Baltimore he also supervised an exhibit conducted by the American Wildlife Institute in cooperation with the Survey.

Regional Office Address Changed.--Effective July 1, the headquarters of Regional Director Daniel H. Janzen of Region 6, East Central, will be 3174 Plankinton Arcade Building, Milwaukee, Wis.

ADMINISTRATION

Memoranda to Field Officers Issued.--Following is a list of the memoranda issued in the "Administrative Field Office" (Admin. F. O.) series since the last issue (April 1938) of the Survey:

- No. 21. Revised. Amendment No. 3. Instructions in solicitations and acceptance of bids--taxes. (May 3.)
- No. 21. Revised. Amendment No. 4. (1) Delayed deliveries under contract--application of the damage clauses; (2) issuance and acknowledgment of receipt of purchase orders under contract--(use of Form Bi-1478a and registered mail.) (May 5.)
- No. 73. Amendment No. 1. Memorandum for field officers who have allotments of C.C.C. funds--transfers of employees from other departments or agencies to positions under emergency appropriations. (April 18.)
- No. 75. Amendment No. 1. Change in registration letters on all Bureau-owned motor boats. (April 13.)
- No. 89. 2d Revision. Lease Procedure. (April 29.)
- No. 94. Amendment No. 4. New standardized annual and sick leave regulations prescribed by the President. (May 9.)
- No. 106. Amendment No. 1. Hours of duty per day and per week. (April 11.)
- No. 117. Amendment No. 2. Disbursing officer for C.C.C. pay rolls paid in Washington. (May 6.)
- No. 178. Amendment No. 2. Authorization of mileage allowance on Form Bi-1466, and payment for use of horses and dogs. (May 4.)
- No. 201. Amendment No. 3. Memorandum for regional directors and all project leaders in Regions 4, 5, 6, and 9 regarding granting of leave. (June 11.)
- No. 229. Certification of vouchers. (April 12.)
- No. 230. Prohibition of disclosure of information pertaining to claims arising from injuries in which the United States has an interest. (April 15.)
- No. 231. Care and maintenance of motor boats. (April 15.)

- No. 232. Alterations in motor boats. (April 18.)
- No. 233. Motor-vehicle accidents. (April 25.)
- No. 234. Personnel relations policy and procedure. (May 17.)
- No. 235. Reports to Bureau of Labor Statistics on force-account construction under regular appropriations. (June 7.)
- No. 236. Endorsement of commercial products contrary to Department Regulations. (June 14.)

The following memoranda to field officers have been issued in "Contracts" series:

- No. 24. Contract for service-station deliveries in Northeastern States of gasoline, lubricating oil, and lubrication service for the period April 1, 1938, to June 30, 1938. (April 5.)
- No. 25. Changes in Procurement Division contracts. (April 13.)
- No. 26. Issuance and acceptance of bids involving payment from funds expiring June 30, 1938. (April 13.)
- No. 27. Procurement of blasting plugs for the period ending June 30, 1938. (April 15.)
- No. 28. Contract for purchase of first aid kits, and refills and individual unit packages therefor, for the period ending September 30, 1938. (May 9.)
- No. 29. Mandatory contracts for (1) tool-holder cutters (Class 40, Supplement No. 1), (2) drill steels (Class 40, Supplement No. 2), and (3) abrasive wheels (Class 40, Supplement No. 3). (May 11.)
- No. 30. Changes in Procurement Division contracts. (May 25.)

PUBLIC RELATIONS

Broadcasts.--In a series of broadcasts that began on the National Farm and Home Hour May 5, Howard Zahniser has discussed on successive Thursdays the following subjects: "Wildlife Conservation for All," "A Texas Ranch Becomes a Wildlife Refuge" (Aransas), "A Nation-wide Survey of Fur Farms," "The Rabbits at Fontana, California," "Malheur--a 'Bonheur' Wildlife Refuge," and "Putting the Duck Stamps to Work," the last being broadcast on June 16. Other subjects are scheduled for discussion on each Thursday as part of a program that begins at 11.30 a.m. E. S. T.

Sees New England Research.--Accompanying John Pearce, Survey biologist at the Northeastern Forest Experiment Station in New Haven, Conn., Howard Zahniser visited scenes of Bureau research in New England between May 10 and May 17, gathering data for use in public-information work. Areas visited were the cooperative units at Connecticut State College and the University of Maine; the Moosehorn Migratory Bird Refuge, Maine, where woodcock are being studied; the Pillsbury Reservation near Newport, N. H., an area of State forest land set aside as a refuge and used for forest-wildlife studies; and the U. S. Fur Animal Experiment Station at Saratoga Springs, N. Y.

Article Describes Scientific Naming of Animals.--Active and retired members of the Biological Survey who have given scientific names to forms of animal life are prominently mentioned in an article in the May issue of Nature Magazine. Written by Don Bloch, while employed in the Section of Current and Visual Information, the article, "Men Who Have Given Their Names," lists many of the birds, mammals, and lower forms whose scientific names include the names of the scientists. Six Bureau members, the article states, have described and named more than 2,000 new and then unrecognized types of vertebrates or invertebrates. Mr. Bloch was reappointed as temporary writer in this section on June 3, but resigned on June 10 to accept a permanent appointment as a writer in the publications department of the U. S. Public Health Service. While employed by the Bureau he was engaged in the preparation of informational material on Survey C.C.C. activities.

Arranges Waterfowl Exhibit.--Waterfowl exhibits including live birds as well as mounted specimens were displayed by the Bureau in cooperation with the Forest Service and the California Division of Fish and Game at the Southern California Auto Club Outing Show held April 19 to 24 at Los Angeles. Game Management Agent James C. Savage, who arranged the Bureau displays, reported that a mallard and 8 ducklings in one of the exhibits, attracted considerable attention. A map of Region 1, Pacific, showing refuges, main highways, and principal cities, was placed near the entrance to the show. Nearly 180,000 persons attended and asked for many Bureau publications that were available.

Official Publications, copies of which may be obtained from the Division of Public Relations, have been issued as follows:

- Pocket mice of Washington and Oregon in relation to agriculture. By Theo. H. Scheffer, formerly Associate Biologist, Section of Food Habits, Division of Wildlife Research. Technical Bulletin No. 608, 16 pp. March 1938. Received Apr. 29.
- Teaching conservation of wildlife through 4-H clubs. By Ruth Lohmann, National 4-H Club Fellow, Extension Service. Miscellaneous Publication No. 291, 34 pp. Feb. 1938. Received March 2. (Cooperative publication.)
- Fort Niobrara Game Preserve, Nebraska. By Clara Ruth, Assistant, Division of Wildlife Refuges. Wildlife Research and Management Leaflet No. 109, 7 pp., illus. April 1938. Received May 26.
- Status of eelgrass (*Zostera marina*) on the north Atlantic coast, February 1938. By Clarence Cottam, Senior Biologist, Section of Food Habits, Division of Wildlife Research. Wildlife Research and Management Leaflet No. 110, 7 pp. April 1938. Received May 19.
- The waterfowl situation: 1937-38. Prepared in the Section of Distribution and Migration of Birds, Division of Wildlife Research. Wildlife Research and Management Leaflet No. 111, 10 pp. April 1938. Received May 26.

- Tankage and livermeal as a summer feed for adult minks. By Charles F. Bassett, Director, U. S. Fur Animal Experiment Station, Section of Fur Resources, Division of Wildlife Research. Wildlife Research and Management Leaflet No. 112, 3 pp. May 1938. Received May 26.
- European and American methods of rat control. By E. M. Mills, Assistant Biologist, Division of Predator and Rodent Control. Wildlife Research and Management Leaflet No. 113, 6 pp. May 1938. Received May 26.
- Care of rabbits during warm weather. By George S. Templeton, Director, U. S. Rabbit Experiment Station, Section of Fur Resources, Division of Wildlife Research. Wildlife Research and Management Leaflet No. 114, 3 pp. May 1938. Received June 4.

Outside Publications.--Articles by members of the Survey appearing in outside publications have been reported as follows:

- Bennett, L. J. The 1934 spring migration of some birds through Clay and Palo Alto Counties, Iowa. Iowa Bird Life 8 (1): 2-6, illus. Mar. 1938.
- Cheesman, W. H. The Biological Survey. Americana Annual, 1938. pp. 79-81. 1938.
- Cottam, Clarence. Razor-billed auk at Currituck Light. Chat 2 (2): 11. Feb. 1938. (Mimeographed.)
- Along the banks. Chat 2 (2): 13. Feb. 1938. (Mimeographed.)
- Biological control of the beet leafhopper in Utah, by George F. Knowlton. Utah Acad. Sci., Arts and Letters 14: 111-139. 1937. (Review.) Auk 55: 303. Apr. 1938.
- Utah birds in the control of certain insect pests, by George F. Knowlton. Utah Acad. Sci., Arts and Letters 14: 159-166. 1937. (Review.) Auk 55: 300. Apr. 1938.
- Dalke, P. D. Amount of grit taken by pheasants in southern Michigan. Jour. Wildlife Managt. 2 (2): 53-54. Apr. 1938.
- Goldman, E. A. Six new rodents from Coahuila and Texas and notes on the status of several described forms. Biol. Soc. Wash. Proc. 51: 55-62. Mar. 18, 1938.
- A substitute name for Felis concolor youngi. Biol. Soc. Wash. Proc. 51: 63. Mar. 18, 1938.
- Greenfield, R. Nepaeozapus insignis in Virginia. Jour. Mammal. 19: 254. May 1938.
- Henry, C. J. Eastern brown pelican in North Dakota. Auk 55: 271. Apr. 1938.
- Horn, E. E. Some relationships of quail and ground squirrels in California. Jour. Wildlife Managt. 2 (2): 58-60. Apr. 1938.
- Kneppen, P. Audubon copper plates, additions and corrections. Auk 55: 288. Apr. 1938.
- Lawrence, H. C. Mattamuskeet waterfowl census. Chat 2 (2): 10. Feb. 1938. (Mimeographed.)
- Lay, G. B. Controlling the house rat. Wildlife Managt. N. C., N. C. Dept. Conserv. and Devlpmt. Bull. 2 (3): 12. Mar. 1938.

- McAtee, W. L. Hoffmann on German bird names. (Vom Ursprung und Sinn deutscher Vogelnamen, by Bernhard Hoffmann. Gustav Kunze, RM 4, Bernburg, 1937. (Review.) Auk 55: 293. Apr. 1938.
- Beneficial swiftlet and edible birds' nest industry in Bacuit, Palawan, by Camuto G. Manuel. Philippine Jour. Sci. 62: 379-390. Mar. 1937. (Review.) Auk 55: 304-305. Apr. 1938.
- McClanahan, R. C. Double-crested cormorant in Delaware. Auk 55: 271. Apr. 1938.
- Broad-winged hawk migration in Mississippi. Auk 55: 273. Apr. 1938.
- Saylor, L. W. Eastern hairy-tailed mole in Virginia. Jour. Mammal. 19: 247. May 1938.
- New Phyllophaga from Nevada. Ent. Soc. Wash. Proc. 40 (5): 129-131. May 1938.
- Revision of the subfamily Oncerinae with description of a new genus. Ent. Soc. Wash. Proc. 40 (4): 99-103. Apr. 1938.
- A new genus and two new species of neotropical Scarabaeidae. (Coleoptera: Melolonthidae.) Roy. Ent. Soc. London Proc., Series B, Taxonomy 7, pt. 3: 72-74. Mar. 15, 1938.
- Scheffer, V. B. Conserving our fur-bearers. Washington State Conserv. Week Bull., pp. 15-16. Apr. 1938.
- Sheldon, H. P. Guns and game: No more hand loading? New books; wildlife conference. Country Life and Sportsman 73 (6): 17, 118, 119, 120, illus. Apr. 1938.
- Guns and game: Utah game; duck sickness; Mormon goodwill; Lovell cartridge. Country Live and Sportsman 73 (5): 24, 115, 116, illus. Mar. 1938.
- Guns and game: Rhino fury; birds; philosophical musings; angling; the "Springfield." Country Life and Sportsman 74 (1): 40, 111, 112, illus. May 1938.
- Smith, C. F. Avocet in South Carolina. Auk 55: 277. Apr. 1938.
- Taylor, W. P. Wildlife is threatened on Texas farms. Ext. Service Farm News 24 (5): 2. Feb. 1938.
- Research points the way to more game in Texas. In Texas Game, Fish, and Oyster Commission Ann. Rept. 1937.
- Williams, C. S., and Marshall, W. H. Duck nesting studies, Bear River Migratory Bird Refuge, Utah, 1937. Jour. Wildlife Managt. 2 (2): 29-48, illus. Apr. 1938.
- Zahniser, H. The story of a dog--and John Muir. Natl. Nature News 2 (13): 1, 7. Mar. 28, 1938.
- Indoors and out--John Muir. Nature Mag. 31: 199, 252. Apr. 1938.
- Indoors and out--Emerson's poetry. Nature Mag. 31: 263, 309. May 1938.

Press and Radio Information and Addresses, copies of which (chiefly in mimeograph) may be obtained from the Division of Public Relations, have been issued as follows:

- Assaulting game agents brings 6 months jail sentence. Press statement 1678-38. Released Apr. 28.
- N. E. Washington land project goes to Forest Service and Biological Survey. Press statement 1689-38. Released May 3.
- Moose killers arrested by flying wardens are jailed. Press statement 1708-38. Released May 3.
- U. S. Biological Survey names new director for northeastern region. Press statement 1718-38. Released May 4.
- Duck clubs denied injunction against Federal game agents. Press statement 1732-38. Released May 7.
- Six new areas add 86,000 acres to bird refuges. Press statement 1744-38. Released May 10.
- California duck hunters punished for using bait. Press statement 1797-38. Released May 17.
- Biological Survey mourns death of Lisle Morrison. Press statement 1836-38. Released May 23.
- U. S. agents get nine convictions in nine game law violations. Press statement 1838-38. Released May 23.
- Area adjacent to refuge in N. C. closed to migratory bird hunting. Press statement 1858-38. Released May 26.
- New bird refuge established at mouth of Savannah River. Press statement 1855-38. Released May 26.
- Federal court fines Illinois men for shipping illegal beaver pelts. Press statement 1860-38. Released May 26.
- Dove study shows way to better protection. Press statement 1859-38. Released May 26.
- Maryland wild duck trapper gets maximum Federal fine. Press statement 1873-38. Released May 28.
- Biological Survey begins first nation-wide fur farm inventory. Press statement 1883-38. Released May 31.
- Rabbits fed soybean or linseed cake ground into pea-size develop rapidly. Press statement 1925-38. Released June 7.
- Bait shooting in Illinois and Oregon punished by Federal fines. Press statement 1927-38. Released May 8.
- Ohio men given Federal sentences for illegally driving wild ducks. Press statement 1929-38. Released June 9.
- Tamarac Migratory Waterfowl Refuge established in West Central Minnesota. Press statement 1950-38. Released June 13.
- Animal food habits. Farm Flashes. Released Apr. 11.
- Beaver engineering. Farm Flashes. Released Apr. 23.
- Birds baiting rule. Farm Flashes. Released May 18.
- A fur farming survey. Farm Flashes. Released June 10.
- Scarecrows go modernistic. Clip Sheet No. 1036. Released May 8.
- Farmers hold fallacies about feathered friends. Clip Sheet No. 1037. Released May 15.
- Wildlife conservation for all. Radio talk by Howard Zahniser, In Charge, Section of Current and Visual Information, Division of Public Relations, National Farm and Home Hour. May 5.

- A Texas ranch becomes a wildlife refuge. Radio talk by Howard Zahniser, In Charge Current and Visual Information, Division of Public Relations, National Farm and Home Hour, May 19.
- Range conservation and rodent control. Address by W. C. Henderson, Associate Chief, delivered at Western States Regional Extension Conference, Spokane, Wash. May 24.
- A nation-wide survey of fur farms. Radio discussion by Howard Zahniser, In charge Current and Visual Information, Division of Public Relations, and Wallace Kadderly, Chief, Radio Service, U. S. Department of Agriculture, National Farm and Home Hour. May 26.
- The rabbits at Fontana, California. Radio talk by Howard Zahniser, In Charge, Current and Visual Information, Division of Public Relations, National Farm and Home Hour. June 2.
- Malheur--a "bonheur" wildlife refuge. Radio talk by Howard Zahniser, In Charge, Current and Visual Information, Division of Public Relations, National Farm and Home Hour. June 9.
- Putting the duck stamp dollars to work. Radio talk by Howard Zahniser, In Charge, Current and Visual Information, Division of Public Relations, National Farm and Home Hour. June 16.

WILDLIFE RESEARCH

Wildlife Surveys

Visit Virginia Research Unit.--Dr. Hartley H. T. Jackson and Leo K. Couch, accompanied by Arthur W. Susott, of the Division of Public Relations, inspected the work of the Virginia Research Unit at Blacksburg on May 23 to 25. Conferences were held with C. O. Handley, unit leader, C. F. DeLaBarre, Dr. I. D. Wilson, head of the biology department of Virginia Polytechnic Institute, graduate students, and Mr. Webster, wildlife technician of the Thomas Jefferson National Forest. The Mountain Lakes and Camp Lee trial demonstration areas were inspected.

Assists in Refuge Selection.--Mr. Couch returned to Washington, D.C., May 8, from a 3-weeks' trip to Washington, Idaho, and Montana. While in northeastern Washington, he cooperated with Farm Security Administration, Forest Service, and local Survey officials in selecting a site for a big-game refuge on Farm Security Administration lands that are to be taken over by the Bureau in Stevens County.

Mr. Couch also reviewed the wildlife-research programs at Washington State College, University of Idaho, and the University of Montana, and while in Montana visited the National Bison Range at Moiese, and the spotted fever laboratory of the Public Health Service at Hamilton. Accompanying Dr. A. B. Hatch, of the University of Idaho, and Forest Service officials, he inspected by airplane and on horseback the condition of the winter elk ranges in the Selway Wilderness Area. On April 30, he represented the Survey at a meeting of the Western Montana Fish and Game Association at Missoula, and discussed Bureau research work.

Inspects Pennsylvania Research Unit.--Mr. Couch spent May 16 to 19 inspecting the new cooperative research unit at Pennsylvania State College. While there the administrative committee consisting of Dr. Logan J. Bennett, leader of the unit, Richard Gerstell, representing the State Game Commission, and Dr. S. W. Fletcher, director of research for the college, approved the unit's budget and work program. On May 19, Mr. Couch conferred with President R. D. Hetzel, Dean R. L. Watts, of the College of Agriculture, and others regarding the work of the unit. Later that day, he and Dr. Bennett met with the State Board of Game Commissioners at Harrisburg.

Collects Florida Mammals.--A. H. Howell returned on April 28 from a two-months' mammal-collection trip in Florida, where he was assisted by Luther C. Goldman. Specimens were obtained at several points on the western side of the peninsula, from Englewood north to Oldtown and on the Ocala National Forest, and then westward to Pensacola. The distribution of a number of species of mammals was worked out and in several cases the known ranges were extended. About 240 specimens were collected. Mr. Howell and Mr. Goldman met an expedition sent out by the American Museum of Natural History on a similar quest for mammal specimens and cooperated with it in its work.

Attends Forestry Meeting.--E. A. Goldman attended the annual meeting of The American Forestry Association at Old Point Comfort, Va., May 5 to 7, and during discussions he directed attention to various phases of wildlife conservation in relation to forestry and the need of considering wildlife, especially game, in forest administration. Trips made during the meeting included visits to the Dismal Swamp and other points of interest.

Addresses Virginia Society of Ornithology.--Dr. Harry C. Oberholser represented the Biological Survey and spoke on "America's Wild Fowl" at the eighth annual meeting of The Virginia Society of Ornithology, held April 29 and 30 at Lexington.

Nine Million Acres in Texas Game Demonstration Preserves.--Almost 9,000,000 acres of Texas farms and ranches are included in the 262 game-management demonstration preserves that were established during 1937 in cooperation with the Extension Service of the A. and M. College of Texas, according to the annual report of R. E. Callender, game-management specialist of the Extension Service.

More than 7,000 farmers, ranchmen, and 4-H Club boys have banded together into cooperative game-management associations in 54 counties. The association areas run in size from 2 or 3 farms to more than 50 parcels of land. Some of these areas involve an entire community and are composed of individual holdings ranging from 8 to 40,000 acres.

Each association makes its own rules, Mr. Callender said. The first step is to make an inventory of the various species of game and their

abundance, and to take steps to increase the game. This is accomplished to some extent through artificial restocking, but the main improvement follows the provision of food and shelter, protection from natural enemies, and restricted hunting. The rules of the association usually provide that, when game is plentiful enough to permit hunting, permits or leases may be issued through the group secretary. Such hunting is strictly regulated.

Revenue from hunting permits is divided among the members on a predetermined basis, and a reserve is accumulated for the introduction of new game and for further protective measures.

Besides establishing preserves for game-management demonstration purposes, 1,089 farm ponds or lakes with a total area of 5,642 acres were constructed in 1937 and stocked with more than a million fish.

Establish Experimental Plot.---Shaler E. Aldous, stationed at the Lake States Experiment Station, Minn., reports that a quarter-acre study plot in dense deer-year timber was cleared in March, and during April half of it was planted to red osier dogwood, white cedar, and mountain maple. The other half was left to reestablish itself naturally. A 55-foot square plot in the center of the study area, half in the planted area and the remainder in the natural area, has been enclosed with an animal-proof fence. The purpose of the experiment is to determine the value and practicability of planting browse species in cleared areas either after fires or logging as against natural establishment of plant life. The fence was erected to demonstrate the effect of browsing animals on the two types of areas.

Deer Transfer Approved.---On March 3, Charles O. Handley and Cecil F. DeLaBarre, of the Virginia Research Unit, conferred with officials of the Jefferson National Forest and with officials of the Dotetourt Game and Fish Protective Association on the proposed transfer to Craig County of 10 deer for restocking. Originally the animals were allocated to Dotetourt County. The proposal was approved. A large number of sportsmen and other residents of Craig County had expressed themselves in favor of closing the deer season there for 5 years, and on March 28 the State Commission of Game and Inland Fisheries approved the close season.

Report on Wildlife Census.---A wildlife census of six pastures in Colorado County, Tex., made by V. W. Lehmann and H. R. Siegler, of the Texas Research Unit, from April 15 to 23, showed a total of 2,090 birds and rabbits on the 1,617 acres in the pastures, or 1.29 birds or mammals an acre. Vesper, Savannah, chipping, field, and grasshopper sparrows were most abundant, numbering 1,449. Forty-eight Attwater prairie chickens, 119 jack rabbits, 39 upland plovers, and 41 golden plovers were among other forms of wildlife counted.

Rainfall of 6.5 inches, recorded April 24 to 26, destroyed many bird nests and small birds in this area. Water retarded by old rice levies in the Egypt section of Wharton County flooded out many nesting prairie chickens,

meadowlarks, rails, and other ground-nesting birds. Male prairie chickens increased their courtship activities on April 26 and 27 and boomed from dawn to dusk when hens that had lost their nests appeared.

Results of Quail-Management Practices in Texas.--Some of the significant findings resulting from quail management work carried on under the supervision of the Texas Research Unit in 1936 and 1937 on the R. B. Wallace and R. H. Hancock properties in Wharton County, Tex., are:

Plowing last May and protection from grazing have produced luxuriant stands of dewberries in blackland deposits. Placing a few tree limbs or old wire so that the dewberries can grow on them has been especially helpful.

Strips plowed in May 1937 show poor growths of quail foods, except in low flat areas, where satisfactory stands of doveweed are apparent.

Fencing of live oak plots from grazing in 1937 has resulted in luxuriant under-stories of blackberry, dewberry, rattan, poison ivy, mustang grape, pepper vine, smilax, trumpet vine, and yaupon, even in densely shaded areas. Protection from grazing for only a year vastly improved live oak plots for quail.

The percentage of survival of trees and shrubs planted in February 1937 has been about as follows: Privet, 100; honeysuckle, 95; Virginia cedar, 80; blackberry, 70; and plum, 65.

Compiles Big-Game Report.--Arthur S. Einarsen, leader of the Oregon Research Unit, reports that the compilation of last year's data of big game is almost complete and will be combined with the sex-ratio reports for the last 2 years. This information is of great value in game management and is probably the only complete check that has been made of big-game sex ratios in any State by counties. Antelope and other animals that have been under complete protection for approximately 25 years have apparently struck a balance in sex. The ratio of mule deer is in direct proportion to the hunting pressure, although there is no record of a critical, unbalanced condition. The study also has shown a definite increase through records of fawn crops and ratios between does and fawns. The Oregon State Game Commission is planning its big-game management program along the lines suggested in these reports.

Begins Field Work on Woodcock.--Clarence M. Aldous, leader of the Maine Research Unit, reports that Howard Mendall began field work on woodcock studies on April 11. In checking singing fields used last year, he found less than half in use again this year. New singing fields, however, have been found and the total number of birds using them appears to be greater than last year. A crew of 10 C.C.C. men assigned to assist in this study found 5 nests in alder runs during the month. None of the nests were in the same places where they were found a year ago.

Mr. Mendall also visited 5 of the 11 artificial singing fields on the Edmunds site and found two of them in use. Motion pictures of woodcock boring grounds and the artificial singing fields made last year have been taken.

Adopt Quail-Management Practices.--Management practices that were recommended by V. W. Lehman, of the Texas Research Unit, for establishing better quail cover have been adopted by the landowners in northeastern

Colorado County, Tex., whose lands form a 40,000-acre demonstration game preserve. Quail-covey territories have been established and cover improved on many of the lands. Pasture grassland in this section has been left unburned to provide adequate nesting cover for Attwater prairie chickens. Formerly 50 to 90 percent of this area was burned each winter and spring.

Squirrel Study Continued.--Besides his regular work as field biologist of the Texas Game, Fish, and Oyster Commission, Phil Goodrum, of the Texas Research Unit, collected 61 gray and 23 fox squirrels during January, February, and March in continuing his study to obtain more complete information on breeding seasons.

Continues Fox-Food Study.--During April, Walter Rosene, Jr., of the Alabama Research Unit, met a number of cooperators and searched for fox dens, for continuing his study of the food habits of this animal. Eighteen active dens were visited this season, and the food remains found near them were collected and cataloged. Stomach collection was more difficult in April than earlier in the season, as the fox hunters were not so active during the denning season. Sixty-five stomachs were collected.

Attends Ornithological Society Meeting.--Thomas D. Burleigh, stationed at the Southern Forest Experiment Station, La., while in southeastern Georgia, from April 19 to 26, attended the spring meeting of the Georgia Ornithological Society at Statesboro and did field work in connection with the proposed publication on birds of that State.

Visit Wichita Refuge.--A group of faculty members of the University of Oklahoma attending the annual meeting of the Oklahoma Academy of Sciences at Craterville Park, just south of the Wichita Mountains Wildlife Refuge, visited the refuge research laboratory and the big-game pastures on April 23. Frank McMurry and C. H. Rouse, of the refuge, assisted Dr. Weese, of the University of Oklahoma, in conducting an ecological field trip for nearly 60 members of the academy. Objectives of the research program were explained.

Cooperates With Forestry Officials.--During May, John Pearce, stationed at the Northeastern Forest Experiment Station, Conn., prepared a review of native forest trees. This had been requested by Dr. Schreiner, leader of the forest genetics project at the station, for use as a guide in the development of useful characteristics of forest trees in addition to their timber value.

Double-crested Cormorant Appears in Oklahoma.--Frank B. McMurry, stationed at the Wichita Mountains Wildlife Refuge, Okla., reports that a double-crested cormorant, a rare migrant in Oklahoma, was observed at the refuge three times during April.

Wildlife Week Observed by Virginia Unit.--Charles O. Handley reports that the staff of the Virginia Research Unit at Blacksburg arranged a wild-

life window display in a local hardware store during National Wildlife Restoration Week last March. Posters concerning the food habits of various hawks and owls, mounted birds, and mounts of native food plants for wildlife attracted considerable attention.

The staff also cooperated with the Blacksburg Game Association in arranging a Wildlife Week meeting that was attended by nearly 200 persons. A "Professor Quiz" wildlife contest was conducted and prizes awarded to the six winners. The contest was repeated at a meeting of the Rural Retreat Community and Wildlife Association.

Experiments With Electric Fence.--Shaler E. Aldous, stationed at the Lake State Forest Experiment Station, Minn., reports that laboratory tests have been made with a small electric fence for holding and keeping out white rats. Small pens built from hardware cloth 6 inches high kept the rats from reaching the food placed inside. More fences are being built for a field test of their effectiveness.

W. P. A. Workers Assigned to Section.--The W. P. A. has assigned the following employees to this section for in-Washington service: Jesse B. Adams, Mrs. Dorothy Baber, Howard E. Bryan, George B. Cobb, Richard de Valeria Mills, Mrs. Marjorie D. Horne, Jack G. Jeffers, Mrs. Margaret Nichols, Miss Aileen L. Page, Mrs. Eoline R. Peers, Miss Irene Powell, Miss Celeste Proctor, Miss Muriel B. Schwartz, and Miss Helen Streeks. Their duties include the preparation of study specimens for the Biological Survey reference collection, treating skulls that are beginning to crack with a preservative, washing vials and noting that the skull numbers correspond with the numbers on the vials, matching skulls with skins, extracting various records from literary sources, checking and arranging cards for filing, repairing maps and card-cataloging the map library, and bringing other work up to date.

Collected New Fishes.--One form of the cottoid fishes collected by Dr. Victor B. Scheffer, while a member of the Bureau expedition that made a biological survey of the Aleutian Islands, Alaska, has been described as a new genus and new species, Phallocottus obtusus, and another as a new species, Sigmistes smithi, by L. P. Schultz, in the Proceedings of the U. S. National Museum (vol. 85, No. 3038, pp. 187-191).

Boy Scouts Taught Conservation.--Four hundred boy scouts attended the scout short course given from April 4 to 6 at the Utah State Agricultural College. Dr. D. I. Rasmussen, leader of the Utah Research Unit, assisted by graduate students and faculty members, conducted classes in conservation, fish, forestry, and bird study. Collections of the college forestry school and the wildlife research unit were used as demonstration material.

Norway Biologist Visitor.--Per Host, naturalist of Oslo, Norway, visited members of the Section staff at the mammal laboratories, May 11, and studied methods of identifying and classifying specimens.

Mammal Skin Room Renovated.--The skin room of the mammal laboratory was recently dust-proofed, burglar-proofed, and painted. During the renovation many of the skins were rearranged and numbered.

Friley Resigns.--Charles Friley, research assistant with the Connecticut Research Unit, resigned effective April 30. He will be located at Iowa State College, Ames, Iowa, while working towards a doctor's degree.

Food Habits Research

Addresses Plant Physiologists.--Dr. Clarence Cottam spoke on the physiology of tidal, marsh, and aquatic plants at a meeting of New England Plant Physiologists held May 13 and 14, at Orono, Maine. Before returning to Washington, he inspected the sites of several proposed W. P. A. drainage projects in Connecticut and other nearby States to ascertain their relations to wildlife.

Talks on Mosquito Control and Wildlife.--On May 4, at Port Republic, N. J., Dr. Cottam spoke on the correlation of mosquito-control activities and wildlife conservation at a joint meeting of the Associated Sportsmen of South Jersey and the Atlantic County Mosquito Commission.

Inspects Proposed Drainage Projects.--Dr. W. S. Bourn spent three days during the middle of May at Norfolk, Va., inspecting proposed W. P. A. drainage projects. Later in the month he and L. W. Saylor made quadrat studies in the vicinity of the Bombay Hook Migratory Waterfowl Refuge, Del., to determine the effects of drainage on wildlife foods.

Obtains Data for Court Case.--F. M. Uhler made field surveys of the Chautauqua Migratory Waterfowl Refuge, Ill., early in June to obtain biological data needed in condemnation proceedings involving land within the exterior limits of the refuge. The proceedings at which Mr. Uhler may be called upon to testify have been opened in the Federal court at Springfield, Ill.

Investigates Reports of Waterfowl Damage to Crops.--Clarence F. Smith spent about two weeks during May in the vicinity of the Mattamuskeet Wildlife Refuge, N. C., investigating reports of wild goose damage to farm crops.

Detailed to Washington.--John J. Lynch, stationed at the Delta Migratory Waterfowl Refuge, La., came to Washington on May 27 for conferences on his work and to make food analyses of waterfowl that occur in the Delta section. He expects to return to the refuge about July 5.

To Band Tri-Colored Blackbirds.--Preparations for banding large numbers of tri-colored redwings in the Sacramento and San Joaquin Valleys,

Calif., to obtain information on their flock movements, were made during May by Johnson A. Neff, stationed at Sacramento, Calif.

Mr. Neff also reports that large numbers of mallards and cinnamon teals are nesting in Sacramento Valley and that in the overflow areas and potholes in Merced County there is a heavy nesting population of pintails, cinnamon teals, shovelers, gadwalls, and redheads. He observed that the water supply for the birds in this section will probably last well through July.

Begin Predator Study on Refuge.--E. R. Kalmbach, of the Denver Food Habits Laboratory, spent several days early in May at the Crescent Lake Wildlife Refuge, Nebr., assisting Ralph H. Imler in beginning a study of the effects of various predators on nesting waterfowl. He also conferred with Dr. Ward M. Sharp, manager of the Valentine Migratory Waterfowl Refuge, Nebr., on plans for conducting waterfowl nest-mortality studies there, after which he went to the Lower Souris Migratory Waterfowl Refuge, N. Dak., to study predator-waterfowl relationships.

Investigates Outbreak of Botulism.--On May 9 and 10, Mr. Kalmbach investigated an outbreak of waterfowl botulism at Deer Lake on the Crescent Lake Wildlife Refuge, Nebr., and the nearby Black Steer Lake. Such outbreaks in spring, explained Mr. Kalmbach, are rather unusual. The disease apparently had run its course, as only six sick birds were found at Deer Lake and two at Black Steer Lake.

During the 2 weeks before Mr. Kalmbach arrived, 169 birds at Deer Lake, including 101 lesser scaups, 11 redheads, and 18 coots, had died from the disease. At Black Steer Lake the disease caused the death of 238 birds, including 75 coots, 60 lesser scaups, 48 gadwalls, and 24 ruddy ducks. As the mortality rate was high among the diving species, it appears that the "toxin pockets" in these lakes were in deeper waters this season.

Distribution and Migration of Birds

Addresses Maryland Sportsmen.--In the absence of Dr. Gabrielson, who was unable to attend, F. C. Lincoln on May 3 spoke before the Maryland Sportsmen's Luncheon Club at Baltimore on waterfowl recovery. He cautioned against too hasty removal of the regulatory restrictions that are helping to bring about an increase in waterfowl.

Flyway Biologists Begin Summer's Work.--After completing woodcock studies in Maine and consulting Robie W. Tufts, Wolfville, Nova Scotia, on waterfowl conditions, Harold S. Peters, Atlantic Flyway biologist left for Blanc Sablon, Quebec, to join Dr. Harrison F. Lewis, of the Canadian Office of National Parks. The two will travel by boat westward to Mingan, Quebec, in investigating waterfowl conditions, after which Mr. Peters will go to Newfoundland. Investigations in this region were made possible by the cooperation of Newfoundland's Department of Natural Resources. Late in August Mr. Peters plans to work in northern Quebec and the James Bay Region in Ontario.

Charles E. Gillham, Mississippi Flyway biologist, plans to investigate the Cambridge Bay region in northern Canada, where Ross's goose is reported to nest. Leaving Edmonton, Alberta, on June 12 for the Athabaska Delta, he expected to proceed on June 15 to Victoria Island, thence to Coronation Gulf, Perry River, and Queen Maude Sea, returning to Edmonton via Aklavik. The Hudson's Bay Company is sending one of its representatives into the same country, and Mr. Gillham has been successful in sharing his chartered airplane.

George B. Saunders, Central Flyway biologist, will spend a large part of July investigating waterfowl conditions in the Prairie Provinces of Canada, going as far north as Lake Athabaska. He also plans to cover waterfowl areas in Saskatchewan and Manitoba.

Luther J. Goldman, Pacific Flyway biologist, already has checked waterfowl conditions in the Fraser Valley, British Columbia, and is now in Alaska, where assisted by Frank Dufresne, executive secretary of the Alaska Game Commission, he will proceed to Fairbanks, Circle, and Fort Yukon, thence down the Yukon River to the delta area. Later in the season he expects to check the fall migration at False Pass in the Alaska Peninsula.

Retraps Ducks Banded Several Years Ago.--E. W. Ehmann, who operates a waterfowl trapping station at Lake Merritt, Oakland, Calif., retrapped 37 ducks, mostly pintails on November 5, 1937, that had been banded in 1931. On the same day he also retrapped a pintail banded on February 1, 1927, four banded on December 15, 1927, and two banded on January 17, 1928.

Pioneer Bird Bander Dies.--William I. Lyon, president of the Inland Bird Banding Association and a bird-banding cooperator of the Bureau, died on June 13, at his home in Waukegan, Ill. He began his banding work in 1913 under the American Bird Banding Association and at the time its activities were taken over by the Survey in 1920, he was one of the most active station operators. Since then he has banded nearly 100,000 birds, a record seldom equalled by ornithologists anywhere in the world. When the Inland Bird Banding Association was organized in 1922, Mr. Lyon declined the presidency of the organization as he wished it to be filled by Dr. S. Prentiss Baldwin. He served as secretary, however, up to the time he was advanced to the presidency about 10 years ago.

Interesting Returns from Banded Birds.--The following are returns of outstanding interest from banded birds, showing band number, place and date of banding, and place and date of recovery.

Herring gull:

564652, Wis., Hog Is., Door Co., 7/7/27 Ont., St. James Mission, 9/1/37

Roseate tern:

36-346019, Mass., Mattapoissett, 6/30/37 Dutch Guiana, 80 mi. off shore
Paramaribo, 11/11/37

Mallard:

230148, Ill., Browning, 11/18/22 Ill., Beardstown, 11/28/37
232682, Mo., Portage des Sioux, 2/25/24 La., Mancham, 12/7/37

Mourning dove:

37-410731, Ohio, Lakewood, 6/20/37 Ariz., Phoenix, 10/26/37

Swamp sparrow:

38-41158, Mass., Shirley, 10/4/37

Fla., Plant City, 1/4/38

Myrtle warbler:

37-394, Mass., North Eastham, 10/19/37

Fla., Fort Meade, 4/16/38

Robin:

37-209601, Ill., Hubbard Woods, 5/10/37

Ill., Hubbard Woods, 3/26/38

37-209602, " " " "

" " " "

(These robins were taken in the same trap at the same time both years)

Fur Resources

Field Day Held at Rabbit Station.--Approximately 300 commercial rabbit producers attended the annual field day held at the United States Rabbit Experiment Station, Fontana, Calif., on May 15. Results of the experimental work on the value of whole grains and various protein supplements and other research were reviewed and problems of the rabbit industry discussed. Director George S. Templeton reported that as protein supplements in a whole-grain ration for rabbits linseed and soybean cakes ground into pea-size are just as satisfactory as the same proteins put into pellet form. Tests with the pea-size protein supplements were made at the experiment station. Approximately 4,000 rabbits a year, including 225 breeding does, are kept at the rabbit station for experimental purposes.

Studies Growth of Silver Fox Hair.--Charles F. Bassett, director of the U. S. Fur Animal Experiment Station, N. Y., has selected a litter of five silver fox pups for a special study of the growth and shedding of guard hair and underfur. The first samples, taken on May 21 when the pups were 28 days of age, were from 6 different parts of the body. More samples will be obtained at two-week intervals up to priming period in December. A special hair-measuring machine will be used to measure the guard hair and underfur in determining the rate of growth.

Attends Mink Breeders' Meeting.--Mr. Bassett discussed the experimental work of the Fur Animal Experiment Station before a group of mink breeders at Carlton, N. Y., on May 15. He emphasized the necessity of conducting careful experimental work, pointing out that the progress of such is naturally slow.

Obtain Data on Silver Band in Fox Fur.--Several thousand measurements of guard hair and underfur of silver foxes used by the Bureau in nutritional experiments have been made in the Section of Fur Resources to determine the effect nutrition and inheritance may have on the position and width of the silver band on the hair. W. P. A. workers assigned to this project are measuring the hair and tabulating the results. The value of silver fox pelts depends to a great extent on the silver band, which may vary greatly in width and location.

Begin Nation-wide Fur Farm Inventory.--Questionnaires for assembling basic statistics on fur farms throughout the country have been compiled with the assistance of the Central Statistical Board and will be mailed shortly.

The mailing list being prepared already has the names of 7,000 fur farmers. Data obtained will be assembled and tabulated with the help of W. P. A. workers on a project established in this section. Present information on the number of fur farms, value of the investments, persons employed, etc., is limited, and, therefore, of little value to the fur industry and Governmental and private research agencies interested in fur resources.

Grow Plants for Muskrat Food.--A 5-acre plot on the Blackwater Migratory Bird Refuge, Md., has been planted to 25 different kinds of vegetable and foliage crops for feeding penned muskrats kept for experimental purposes at the Fur Animal Field Station on the refuge. By rotating the crops it is hoped to have throughout the summer a supply of green vegetation on hand for the animals, which are weighed every two weeks to determine the value of different foods. Work at the field station on the construction of a new battery of muskrat pens with concrete water troughs 14 inches wide is under way.

Observes Mink Farm Experimental Work.--Dr. Robert K. Enders, who is studying the reproductive cycle of minks and other fur animals, recently visited a Connecticut mink farm where experiments are underway to induce the animals to breed in October and November through the use of artificial lighting. Prof. T. Hume Bissonnette, of Trinity College, Hartford, Conn., who has published results of many experiments on the influence on the reproductive cycle of several species of small fur animals, is supervising the experiment.

Transfer Laboratory Work.--During the summer, while the laboratory of the embryological department of Johns Hopkins University, Baltimore, Md., is closed, Dr. Enders will continue his laboratory studies of the reproductive cycle of the mink at Swarthmore College, Swarthmore, Pa.

Assists in Muskrat Study.--Dr. Thomas R. Forbes, of the medical school of Johns Hopkins University, has been employed for the summer to assist Dr. Enders in a study of the reproductive cycle of the muskrat. Considerable muskrat material for the study has been collected at the Fur Animal Field Station, Cambridge, Md.

Disease Control

Investigates Mink Disease.--On May 13, Dr. J. E. Shillinger investigated possible causes of urinary calculi among minks at the U. S. Fur Animal Experiment Station, N. Y. This disease was seriously affecting the breeding animals, and as symptoms of nutritional deficiency were observed, Dr. Shillinger recommended a corrective diet. Published reports on this disease indicate that nutritional deficiency contributes to its occurrence. Before returning to Washington, Dr. Shillinger also inspected fur farms at Dover, Mass., on May 16, where silver foxes were being lost from unknown diseases.

Gives Talk Before High School Students.--Dr. Don R. Coburn, stationed at the Bear River Migratory Bird Refuge, Utah, gave an illustrated talk on March 30, on the "Relationship of Disease Research to Wildlife Restoration" before 400 students of the Brigham, Utah, high school. The talk was sponsored by the local unit of National Wildlife Federation as part of the National Wildlife Restoration Week program.

LAND ACQUISITION

Makes Field Trip.--Early in May, Mr. Dieffenbach and S. P. Meyers, of the Solicitor's Office conferred at St. Louis, Mo., with Department of Justice officials and Charles S. Cook, Bureau supervisor of the Central Area, on court proceedings involving land on the Chautauqua Migratory Waterfowl Refuge, Ill. Before returning to Washington, Mr. Dieffenbach attended to land acquisition matters in visits to Des Moines, Iowa; Lincoln, Nebr., and Minot, N. Dak. At Lincoln, Nebr., he conferred with State officials on the Valentine Migratory Waterfowl Refuge, Nebr., and in North Dakota, he and Carl B. Vogen inspected the Upper and Lower Souris Migratory Waterfowl Refuges. On June 4, Mr. Dieffenbach returned to Illinois to attend the condemnation proceedings involving land on the Chautauqua Refuge.

Back Bay Refuge Established in Virginia.--The President on June 6 signed an Executive order establishing the Back Bay Migratory Waterfowl Refuge on approximately 8,950 acres of land in Princess Anne County, Va. Included in the refuge site are Long Island, a group of adjoining smaller islands, the Ragged Island group, and a stretch of ocean beach. The area is a celebrated wintering ground for many species of waterfowl, including geese, brant, whistling swans, black ducks, pintails, redheads, and ruddy ducks. Wood ducks also nest there in large numbers.

The major work planned for the Back Bay area is the construction of a sand barrier for protecting fresh-water ponds from salt water during storms. The refuge contains many ponds, sloughs, and inlets that provide food for the birds.

Part of the Ragged Islands was patented to one Joseph Perry on April 21, 1690, and the grant to Perry recites, "This said land being due unto the said Joseph Perry by and for ye importation of one person" into the colony, the person imported being William Floar. A patent for 551 acres to Edward Hack Mosely on July 20, 1738, recites, "551 acres of marsh and the rivers, waters, and water courses therein contained together with the privileges of hunting, hawking, fishing, fowling, and all other profits, etc."

Oyster Bed Island Becomes Refuge.--The President on May 9, signed an Executive order establishing the Tybee Migratory Bird Refuge on approximately 100 acres of land in the Savannah River about 12 miles from Savannah, Ga. The refuge includes the artificially created Oyster Bed Island, where many species of migratory birds native to the Southeastern States nest. The most common resident species are the black skimmer, oyster

catcher, Wilson's plover, willet, clapper rail, and the least, royal, and gull-billed terns. During the spring and fall migratory waterfowl also use the area as a resting and feeding ground. Sea turtles also deposit their eggs in the sand. Lands within the refuge are under the primary jurisdiction of the Department of Commerce and the War Department for lighthouse operation and river and harbor improvement.

Antelope Refuge Enlarged.--An Executive order dated May 23 provides for the enlargement of the Hart Mountain Antelope Refuge, Oreg., by including within its borders all private lands acquired or leased by the Government for the refuge since December 21, 1936. The order provides further that other private lands within the area shall also become a part of the refuge upon acquisition or lease.

Surveys and Maps

Map Work Progresses.--State maps for the Bureau atlas showing all Federal refuges have been completed and are now available for printing and distribution. In addition, 36 of the 56 base maps for the atlas on the Upper Mississippi River Wildlife and Fish Refuge have been completed. As soon as this is finished work will begin on the acquisition status maps for this refuge unit. Base and tract maps of the Bureau atlas for the Bombay Hook Migratory Waterfowl Refuge, Del., also have been made.

Acquisition status maps on the scale of 1 inch to 1 mile have been completed for the following refuges: Big Lake and White River Migratory Waterfowl Refuges, Ark.; Sacramento Migratory Waterfowl Refuge and Salton Sea Wildlife Refuge, Calif.; St. Marks Migratory Bird Refuge, Fla.; Black-beard Migratory Bird Refuge and Okefenokee Wildlife Refuge, Ga.; Savannah River Wildlife Refuge, Ga. and S. C.; Deer Flat Migratory Bird Refuge, Idaho; Union Slough Migratory Waterfowl Refuge, Iowa; Delta and Sabine Migratory Waterfowl Refuges, La.; Moosehorn Migratory Bird Refuge, Maine; Blackwater Migratory Bird Refuge, Md.; Seney Migratory Waterfowl Refuge, Mich.; Mud Lake, Talcot, and Tamarac Migratory Waterfowl Refuges, Minn.; Lake Bowdoin and Thibadeau Migratory Waterfowl Refuges, Pablo Migratory Bird Refuge, and National Bison Range, Mont.; Crescent Lake Wildlife Refuge and Valentine Migratory Waterfowl Refuge, Nebr.; Anaho Migratory Bird Refuge, Nev.; Sullys Hill Game Preserve, N. Dak.; Cape Romain Migratory Bird Refuge, S. C.; Waubay Migratory Waterfowl Refuge, S. Dak.; Lake Isom Migratory Waterfowl Refuge, Tenn.; Columbia River, Jones Island, Matia Island Migratory Bird Refuges, Wash.; and Elk Refuge, Wyo.

Furnish Engineering Data.--As a result of damage by local residents to a water-control structure on the Mud Lake Migratory Waterfowl Refuge, Minn., on May 11, injunction proceedings were instituted in the Federal District Court at Fergus Falls and a hearing held later in the month. The court granted a temporary restraining order, which was requested by the Federal district attorney. Special engineering surveys for use at the hearing were prepared by Kenneth C. Kern, Richard F. Dittman, and Harvey Sexauer. Further court action on a permanent injunction was suspended to

give the defendants and the United States time to make additional surveys and investigations.

Begin Cadastral Surveys.--Cadastral surveys are now under way on the Tamarac and Mud Lake Migratory Waterfowl Refuges, Minn.; the North Platte Migratory Bird Refuge, Nebr.; and the Long Lake Migratory Waterfowl Refuge, N. Dak.

Appraisals and Negotiations

Confers on Condemnation Proceedings.--On June 14, R. M. Rutherford left for New Holland, N. C., to confer with Department of Justice officials on condemnation proceedings involving lands on the Mattamuskeet Migratory Waterfowl Refuge. Before returning to Washington he attended the convention of the International Association of Game, Fish, and Conservation commissioners, at Asheville, N. C., June 20 to 25.

Works on Land Negotiations.--During the middle of May and early in June Fred R. Kessler was in Norfolk, Va., and Tallahassee, Fla., attending to curative and negotiative work connected with the Back Bay Migratory Waterfowl Refuge, Va., and the St. Marks Migratory Bird Refuge, Fla.

Transfers.--Mrs. Gladys D. Jackson, a clerk-stenographer in the Division, transferred to the office of Regional Director D. A. Gilchrist, of Region 3, at Albuquerque, N. Mex., effective July 1.

WILDLIFE REFUGES

Easement Program Enlarged in Montana.--M. O. Steen, easement project administrator, reports that there are now six easement refuges in Montana--the Black Coulee project, Blaine County, 1,420 acres; the Greedman Coulee project, Hill County, 1,680 acres; Hailstone project, Stillwater County, 2,300 acres; Hewitt Lake project, Phillips County, 1,520 acres; Lake Mason project, Misselshell County, 8,571 acres; and Lake Thibadeau project, Hill County, 3,560 acres. Necessary dams, spillways, and bridges have been constructed with W. P. A. labor, ditches have been dug, some fencing erected, and a few buildings constructed. Attention also has been given to biological development. Future plans include the fencing of additional areas; construction of nesting islands, roads, trails, dikes, and dams; and the planting of trees and shrubs.

Lighthouse Refuges Added.--Three lighthouse reservations declared surplus to the needs of the Department of Commerce were recently transferred to the Bureau for administration as migratory bird refuges. They are the Grand Marais Harbor Lighthouse Reservation, Alger County, Mich., 1,014 acres; the Cape Meares Lighthouse Reservation, Willamette Meridian, Oreg., 139 acres; and the Cape Henlopen Lighthouse Reservation, Sussex County, Del., 212 acres.

Captive Geese Nest on Lower Souris.--According to C. J. Henry, manager of the Lower Souris Migratory Waterfowl Refuge, N. Dak., four pairs of the captive Canada geese were nesting on the refuge this spring, and more were likely to nest, especially two that paired off with wild geese. Since then a number of young have been hatched. These are the first Canada geese to nest on the area since it became a refuge, although they nested there in large numbers before the valley was drained. As soon as some of the captive geese began nesting, others in the pen were released. The released birds, however, can probably be baited back into the pen in the fall.

Visit Bear River Refuge.--On May 27, about 300 persons from northern Utah, including Secretary of State E. E. Monson and the secretaries of the Ogden and Logan Chambers of Commerce, visited the Bear River Migratory Bird Refuge. The trip was sponsored by the Box Elder Chamber of Commerce, which is located in the same county as the refuge.

Superintendent Vanez T. Wilson addressed the group and explained the purpose, value, and accomplishments of the refuge and outlined development work completed and contemplated. The delegation then visited the administration buildings, headquarter's grounds, and the dikes between the units, where they were shown how the water level is regulated by control gates and spillways. Secretary Monson in addressing the group remarked that he had never before realized the great value of the refuge.

Wildlife Increases on Lake Bowdoin.--Whistling swans and Canada geese were more abundant than usual on the Lake Bowdoin Migratory Waterfowl Refuge, Mont., this spring, reports Refuge Manager Benjamin M. Hazeltine. A greater number of Canada geese are now nesting on the refuge, and 70 whistling swans remained there for over a week before moving northward. The 13 antelope are in first-class condition, and a satisfactory increase in their numbers is expected this season.

Cinnamon Teal Seen on Valentine Refuge.--A pair of cinnamon teal were observed on the Valentine Migratory Waterfowl Refuge, Nebr., on April 23, reports Dr. Ward M. Sharp, refuge manager. This is the first time this species has been seen there since the refuge was established. Although the major flight of ducks had passed through the refuge before April, Dr. Sharp states that a large number still remained at the close of the month. More pintails and redheads were observed on the refuge at the end of April than in previous years at the same time.

Ducks Prefer Ungrazed Area for Nesting.--In his biological report for May, Gilbert E. Wardwell, refuge manager of the Crescent Lake Migratory Waterfowl Refuge, Nebr., reports that almost half the ducks nesting there are near Gimlet Lake, an area that has been retired from grazing since 1934 and now provides ideal nesting cover. He anticipates that when the rest of the refuge is withdrawn from grazing, nesting will be greatly increased over the entire area.

Tornado Strikes Near Crescent Lake Refuge.--Mr. Wardwell reports that a tornado in the vicinity of the Crescent Lake refuge on April 26

passed directly between two trucks returning to Oshkosh with the W. P. A. crews. A school house near the refuge was destroyed, and three children were killed. The teacher and four other children were seriously injured.

Shorebirds Abundant at Pea Island.--S. A. Walker, refuge manager of the Pea Island Migratory Waterfowl Refuge, N. C., reports that there was a large concentration of shorebirds on the refuge late in May, including more ruddy turnstones than he had ever previously seen there.

Area Adjacent to Refuge Closed to Hunting.--A Presidential Proclamation dated May 9 designated certain lands and waters in the vicinity of the Pea Island Refuge as a closed hunting area. The newly closed area includes shallows in the sound between the refuge and the mainland.

Ceases Feeding Elk.--Winter feeding operations that began at the Elk Refuge, Wyo., on February 12, ended on April 16. During this period approximately 6,200 elk that used the three feeding grounds consumed 1,700 tons of hay. During the winter 158 elk--120 calves, 27 cows, and 11 bulls--died on the feeding grounds and adjoining lands. A number of calves that wintered on the Sheep Creek and Flat Creek foothills and did not come on the refuge feed grounds also died. Losses, however, were not considered abnormally high in view of the prevailing weather conditions.

The snow melted after the feeding operations ended, and many elk that had wintered on the refuge returned to the foothills. The first week in May, however, was cold and stormy, and on the night of May 4 many animals returned to the meadow lands following a 6-inch fall of snow.

Deer and Wild Turkey Increase at Refuge.--Broods of young wild turkeys have been observed at various points this year on the Wichita Mountains Wildlife Refuge, Okla. Natural foods are abundant and conditions favorable for the young birds.

White-tailed deer apparently are increasing. Fifty-eight were counted on June 4 by Assistant Superintendent Ernest J. Greenwalt between the Medicine Park gateway and headquarters. Visitors frequently stop their cars on the road in the Medicine Park section to watch the animals graze.

Refuge Lakes Opened to Fishing.--Approximately 4,000 fishermen and 8,500 spectators were present at the opening of the fishing season on May 29 at the Wichita Refuge. Regulations permitting non-commercial fishing on Lakes Quanah Parker, Osage, and Burford between 5 a.m. and 8 p.m. from May 29 to September 15, inclusive, were announced on May 20 in the Federal Register.

Many fishes were caught, among them being a 5 1/2 pound bass taken from Lake Burford. Good strings of perch, crappie, and catfish were also caught in this lake, which offered the best fishing. Water in Lake Osage was muddy following heavy rains during the previous week. Water in Lake Quanah Parker was also murky, but many small perch and some good-sized catfish were caught.

State game wardens checked the licenses of the fishermen and assisted in patoling the lake area. Mr. Mushbach says that "although a great many fishermen didn't get a bite, all seemed happy and all apparently had a good time."

Buffalo Herd Turned Back on Range.--The buffalo herd at the National Bison Range, Mont., after being fed in corrals from January 31 to June 1, has been turned back on the range. Grasses have grown sufficiently to permit grazing again.

Two buffalo cows and their calves, a 2-year old bull, an old bull known as "Paul Bunyan," and the albino bull, "Big Medicine" born in 1933, have been placed in the exhibition pasture near headquarters where visitors may see them. The white buffalo attracts many visitors, but on the range he usually remained so far away that he could not be seen plainly.

Pasture Prospects Good at Sullys Hill.--Prospects for good pasture and hay crops at the Sullys Hill Game Preserve, N. Dak., are much better than for several years. Precipitation in the vicinity was heavier this spring than usual, reports Wesley D. Parker, in charge of the preserve.

Many small birds were observed on the preserve during their annual migration this spring, but no large numbers of waterfowl.

W. P. A. Employee Killed.--Harold Nelson, a W.P.A. employee, who has collected specimens for the museum at Fort Niobrara Game Preserve, Nebr., and also assisted in various other projects at that preserve, was accidentally killed on May 26 at the Valentine Lakes Migratory Bird Refuge, Nebr., when the gun he was removing from his car discharged. He had gone to the refuge to collect specimens.

Elk Swims Lake and Flees to Refuge.--George E. Mushbach, superintendent of the Wichita Mountains Wildlife Refuge, Okla., was informed that on April 25 a mature bull elk that escaped from the pasture of the Medicine Park State Fish Hatchery, Okla., swam across Lake Lawtonka and fled into the Wichita Refuge. Witnesses following in a motorboat said they timed the animal in the lake, and it swam slightly more than 2 miles in 12 minutes. Two elk cows were donated to the State Fish Hatchery Park from the Wichita Refuge herd last January.

Buffalo Calves in Preserve Herds.--The following numbers of buffalo calves have been born this spring on preserves maintained by the Survey: Wichita Mountains Wildlife Refuge, Okla., 58; National Bison Range, Mont., 45; Fort Niobrara Game Preserve, Nebr., 24, and Sullys Hill Game Preserve, N. Dak., 5. Five of the calves at the Bison Range were stillborn and two died soon after birth. One also died at the Fort Niobrara Preserve. Twenty-two longhorn calves are in the herd at Wichita Refuge and three in the small herd at Fort Niobrara Preserve. Ten mountain sheep (bighorn) lambs have been seen at the National Bison Range.

Water Conditions Improve at Antelope Refuge.--Superintendent E. R. Sans reports that there is more water on the Charles Sheldon Antelope Refuge, Nev., than for several years. Grass is growing rapidly, the Swan Lake reservoir is full, and several thousand ducks are resting there.

Heavy Rains at Wichita Refuge.--Quanah Parker Lake on the Wichita Mountains Wildlife Refuge, Okla., is filled with water for the first time since its completion in May 1935. Rainfall of 1.40 inches on May 3 raised the water level. The lake is now 49 feet deep at the dam and its water surface contains 100 acres. Lakes Jed Johnson, Elmer Thomas, and Comanche were not filled, but heavy rains on May 21 and 22 filled the first lake to overflowing and in the second lake the water rose to 55.5 feet, leaving about 31 feet yet to be filled. Although the rains damaged the refuge roads considerably, especially the Mount Scott road, they greatly improved forage conditions.

Passes Resolution Approving Refuge Administration.--Policies followed by the Survey in administering the Wichita Refuge were approved by the Oklahoma Academy of Sciences in a resolution adopted at its annual meeting on April 22. The resolution also requested that the refuge area north of the Scenic Highway and west of the Easter pageant area be maintained strictly for wildlife research purposes, and be permanently closed to domestic livestock, public thoroughfares, and other interferences with wildlife.

Snakes Captured at Wichita Refuge.--A 54 inch diamond-backed rattlesnake was caught in a thicket on the shore of Lake Rush within the Wichita Refuge, on May 24, and, on May 27, a 26 inch hog-nosed snake was found in the road near the Easter pageant area and was turned over to research workers at this refuge.

Kiwanis Club Picnic Held at Wichita Refuge.--More than 500 members of the Kiwanis Clubs from southwestern Oklahoma and nearby Texas held a picnic on May 26 at Quanah Parker campground on the Wichita Refuge. They visited various scenic points in the refuge, including Mount Scott.

Antelope Fawns Born at Wichita Refuge.--One of the antelope does recently transferred from New Mexico to the Wichita Refuge has given birth to twins. Three other fawns have appeared in the small antelope band transferred from New Mexico, bringing the total number on the refuge to 14. Two of the transferred animals died and one that disappeared has not been found.

Personnel Items.--Percy L. DePuy was appointed junior refuge manager of the Squaw Creek Migratory Waterfowl Refuge, Mo., effective June 4. Wm. P. Baldwin, Jr., was appointed junior refuge manager at the Bulls Island unit of the Cape Romain Migratory Bird Refuge, S. C., effective June 1.

Hayden A. Carter was appointed junior refuge manager at the Savannah River Wildlife Refuge, Ga., effective May 23. Dr. E. P. Creaser, formerly

in charge of the Savannah River Refuge, has been transferred to the office of Regional Director Silver, at Atlanta.

Herbert H. Dill, formerly employed as junior biologist on the Tule Lake Wildlife Refuge, Calif., was transferred on June 1 to the Ruby Lakes Migratory Waterfowl Refuge, Nev., as junior refuge manager.

Kenneth Drumm, formerly stationed at the Mud Lake Migratory Waterfowl Refuge, Minn., was appointed junior refuge manager of the Swan Lake Migratory Waterfowl Refuge, Mo., effective June 1.

Maynard S. Johnson was appointed assistant refuge manager in charge of the Mattamuskeet Migratory Waterfowl Refuge, N. C., effective June 10.

Edward A. Davis was appointed reservation protector on the Upper Mississippi River Wildlife and Fish Refuge, Minn., effective May 21.

A. D. Campbell, junior range examiner, was placed in charge of the Bitter Lakes Migratory Waterfowl Refuge, N. Mex., effective May 1.

Merrill C. Hammond was appointed junior aquatic biologist at the Lower Souris Migratory Waterfowl Refuge, N. Dak., effective May 9.

Miss Marjorie Nelson, assistant clerk-stenographer, was transferred to this Division from the Division of Administration on June 1.

Miss Anna Aronowitz was appointed junior stenographer, effective April 13, to assist in W.P.A. activities.

The following laborer-patrolmen have recently been appointed: Wayne C. Tyler, Medicine Lake Migratory Waterfowl Refuge, Mont., effective May 16; Walter H. Granrud, Upper Souris Migratory Waterfowl Refuge, N. Dak., effective June 6; and Marcus J. Haines, Malheur Migratory Bird Refuge, Oreg., effective May 9.

GAME MANAGEMENT

Attends Kentucky Sportsmen's Meeting.---On May 16, Mr. Crouch spoke on predatory animals and birds and their effect on the game supply and on enforcement of game laws at the meeting of the Kentucky League of Sportsmen at Elizabethtown, Ky.

Confer on Law Enforcement.---Chester A. Leichhardt conferred on law-enforcement matters with Regional Director D. H. Janzen and Game Management Agents Carter, Creech, Martin, and Perry, at Chicago on May 5 and 6, and with them attended the ninth annual fur show and banquet sponsored by a fur-handling corporation.

Law Enforcement

Confers on Lacey Act Enforcement.---F. P. Callaghan conferred with Agents P. S. Farnham and Albert Stadlmeier in New York City during the week of May 16 and with members of the fur trade on enforcement of the Lacey Act.

Feeding Regulation Again Upheld.---An opinion by the United States Circuit Court of Appeals at San Francisco, Calif., on April 15, upheld the decision of the Federal District Court in denying a request by certain hunting clubs for an order restraining enforcement of the Migratory Bird Treaty Act Regulations. The Circuit Court held:

"We do not agree * * * * * that bringing the line of flight of wild fowl by baiting to a hunting territory is not 'indirectly' a 'luring' within the meaning of the regulation.

"We believe the appellants have violated the Secretary's regulation whether by pursuing the indirect method of baiting before the season opens to keep the birds there to be shot after the season opens, so that hunters may flush them as they walk or punt over the preserves, or by directly placing the grain in front of the blinds or stands during the season. Wherever the grain is placed on the preserves, the wind will create lines of the birds' flight, to and from it, which will aid the slaughter from blinds located for the purpose."

The court further held, in referring to the regulation not permitting the taking of migratory game birds by means of feed, that the act and regulation are supported by the Migratory Bird Convention, the making of the regulation against baiting is not a delegation of legislative power, and does not lack the definiteness necessary to describe a penal offense.

The court also held that under the commerce clause of the Constitution Congress has authority to confer on the Secretary of Agriculture the power to prescribe the means by which migratory birds may be taken.

Duck Baiting Cases Closed.--On April 30, 16 persons entered pleas of guilty in Federal court at San Francisco, Calif., to taking wild ducks by means of feed and were fined \$25 each, the fines being suspended in three cases. Additional charges against two of the hunters, one hunting without a stamp and the other hunting with a gun not properly plugged resulted in fines of \$25 each which were suspended. Charges against two others for hunting by aid of bait were dismissed.

Hunted Over Decoys Not Their Own.--Two hunters charged with hunting wild ducks over live decoys and corn were found guilty in Federal court for the Southern District of Illinois on June 1, and fined \$25 each. It appeared the hunters had blinds adjoining the property of a disinterested person where live decoys were present and corn available. In disposing of the cases the court indicated it made no difference who owned the decoys if hunters were taking advantage of their presence to obtain ducks.

Three other hunters charged with hunting waterfowl by means of bait were fined \$25 each upon pleading guilty. Another hunter brought into court the following day pleaded guilty to a charge of killing ducks in close season and in default of a \$25 fine was committed to jail 30 days.

Maximum Fine for Duck Trapping.--The maximum fine of \$500 was imposed against a trapper of wild ducks from the Eastern Shore of Maryland when arraigned on May 26 in Federal court at Baltimore, Md. The violator admitted trapping and selling large numbers of wild ducks. Activities of the defendant were condemned by the court, which said it was reluctant to let him go without adding a jail sentence.

Rallied Ducks With Motorboat.--Upon being found guilty of rallying ducks with a motorboat, a defendant in Federal court at Toledo, Ohio, on June 2 was fined \$300 and costs of \$29.50, and given a suspended 3-month jail sentence.

9 Hunters Fined.--Fines of \$15 each were assessed eight persons arraigned in Federal court at Camden, N. J., on May 17, on charges of violating the Migratory Bird Treaty Act, and in another case a \$25 fine was imposed.

One case involved the sale of wild ducks and another the driving of ducks with a motorboat. Two defendants were charged with killing and possessing an excess limit of rails, four with possessing an aggregate overlimit of ducks, and one with hunting ducks in close season.

Killed Ducks in Close Season.--Two persons charged with killing wild ducks on January 25 were arraigned in Federal court at Monroe, La., on February 5. One was sentenced to serve 6 months in jail, and the other in default of a \$25 fine was committed to jail 30 days.

Duck Trappers Fined.--Two persons arraigned in Federal court at Norfolk, Va., on May 2 for possessing ducks in close season that had been trapped, were fined \$25 each and warned by the court that the balance of the maximum fine of \$500 and 6 months in jail would be imposed if they appeared in any Federal court within 3 years.

Fined \$50 for Close Season Kill.--A defendant arraigned in Federal court at Tacoma, Wash., on May 25, on a charge of killing a wild goose in close season was fined \$50 and costs of \$50.

Resisted Federal Officer.--The fourth defendant in Illinois charged with resisting a Federal game management agent appeared in Federal court at Springfield on April 25, and was given a 6-month jail sentence, which was the same sentence received by the three other defendants in previous trials.

Duck Sellers Punished.--Thirteen cases involving the sale of wild ducks were disposed of in Federal court at Jonesboro, Ark., during the May term. Three defendants were fined \$100 each; two \$50 each; one \$40; one \$10; two \$25 each; and two \$5 each. Two cases were dismissed.

Two other cases involving the same offense were disposed of recently in the Federal court for the Northern District of Mississippi with each defendant receiving a \$25 fine and a 40-day jail sentence.

Arrest Beaver Skin Shipper.--A resident of Los Angeles, charged with unlawfully shipping 8 beaver skins to St. Louis, Mo., in violation of the Lacey Act pleaded guilty on May 23 in Federal court for the Southern District of California and was fined \$50.

Transported Mountain Sheep Heads.--A defendant charged with illegally transporting mountain sheep (bighorn) heads from Wyoming to Texas in violation of the Lacey Act was given a suspended fine of \$200 on April 25 upon pleading guilty in Federal court at San Angelo, Tex.

Fur Dealer Fined.--A fur dealer charged with handling raw furs without a license was fined \$250 and costs on April 26 in a State court at Seattle, Wash. Information of the violation was furnished a State game protector by one of the Bureau's agents.

Violated Lacey Act.--Pleading guilty to one count of an indictment charging the illegal transportation of 11 beaver skins from Minnesota and Illinois to Missouri in violation of the Lacey Act, a resident of Illinois was fined \$100 on May 20, 1938 in Federal court at St. Louis, Mo. A co-defendant who plead nolo contendere was fined \$50. The court ordered the skins forfeited.

Fined for Using Bait.--Fines of \$15 each were assessed in Federal court at Portland, Oreg. on May 26, against 6 persons charged with hunting migratory waterfowl by means of bait. Another defendant charged with aiding and abetting the violations by putting out grain was fined \$25 and costs.

Deer Violator Convicted.--For transporting deer from Michigan to Wisconsin contrary to State law and the Lacey Act, a defendant arraigned in Federal court at Marquette, Mich., on April 19 was sentenced to 6 months in jail. The sentence was suspended and the offender placed on probation 2 years.

Used Motorboat.--Three persons arraigned on charges of hunting ducks from a motorboat entered pleas of guilty on June 8 in Federal court at Alexandria, Va., and were fined \$10 each.

Seize Illegal Shipment of Beaver Skins.--A shipment of 45 beaver skins found to have been illegally transported from Wisconsin was seized in New York City on May 16. Further investigation indicated that the skins may have been shipped at first from Montana to Wisconsin. Prosecution of persons involved in the illegal transaction is expected to follow soon.

Dove Hunter Fined \$50.--A hunter charged with hunting mourning doves with a repeating shotgun with a capacity of more than three shells was found guilty June 8 by a jury in the Federal court at Galveston, Tex. He was fined \$50. Another hunter who pleaded guilty to a charge of killing six snow geese in close season was given a 10-day jail sentence as he had been held in jail 63 days before being arraigned.

Close 14 Bait Cases.--Fourteen cases of hunting migratory waterfowl by means of bait were closed in Federal court for the Southern District of Illinois on May 18. One defendant was fined \$15; nine \$25 each; one \$50; one \$60; and two were discharged. A close season duck hunter arraigned in the same court on June 24 was sentenced to jail 30 days.

Violated Dove Regulation.--Six persons were fined \$10 each at the May term of Federal court at Amarillo, Tex., for hunting mourning doves with guns not properly plugged. All pleaded guilty. Another defendant arraigned at the same time was fined \$15 for hunting ducks in close season.

Killed Robins.--Based on evidence obtained by State and Federal officers 8 persons in Mississippi who killed robins during February were recently prosecuted in State court. Fines totaling \$165 were imposed.

Used Bait.--Three hunters charged with hunting ducks with the aid of corn pleaded guilty in Federal court at Little Rock, Ark., on May 18 and were fined \$50 each.

Alaska Game Law Administration

Amendments to Alaska Game Law Approved.--Amendments that facilitate administration of the Alaska Game Law were approved during the closing days of the last Congress. One section of the law was amended to include a definition of Indians and Eskimos and to give permanent protection to bison, musk oxen, and other animals transplanted, introduced, or reintroduced. Marmot, raccoon, and pika are new additions to the list of fur animals.

The Secretary of Agriculture was given discretionary authority in requiring a 3-year period of residence for non-residents seeking resident trapping privileges. Under certain conditions the Secretary may also declare black bears as game instead of fur animals.

The law was also amended to authorize the purchase, operation, maintenance, and repair of aircraft; restocking of depleted wildlife areas; emergency feeding of wildlife; and investigations of wildlife conditions. The provision requiring a 90-day period of publication for regulations was removed so that regulations issued by either the Alaska Game Commission or the Secretary of Agriculture will become effective on the dates they specify.

PREDATOR AND RODENT CONTROL

Hunter Thompson Killed.--District Agent R. E. Bateman reports that Hunter Carol Thompson, while hunting for mountain lions in rough country at the head of St. Marys Lake, Mont., was fatally injured on May 8, in a rock slide. After traveling all night through rugged country to reach the scene of the accident, a rescue party removed the body from the slide. According to reports, Thompson fell 100 to 120 feet when a ledge gave way. He is survived by Mrs. Thompson, a daughter, and a step-daughter.

Assists Bureau of Prisons in Rodent Control.--At the request of the Bureau of Prisons, Department of Justice, Frank W. Jarvis, of this Division, was detailed during the middle of May to supervise fumigation and use Bureau methods in controlling rats and mice at the Federal Industrial Institution

for Women at Alderson, W. Va. Mr. Jarvi's said that good results were obtained with red squill and hydrocyanic acid gas, the latter being used in fumigation. Livestock buildings, implement and fertilizer sheds, and the dump were heavily infested with rats. One of the storehouses was badly damaged by prison employees in previous attempts to control rodents by the use of carbon disulphide. Although the employees were careful in using the chemical an explosion resulted apparently when an electric spark was produced in a telephone.

Selective Coyote Control Pays.--A force of 15 hunters was maintained in the Arizona District during March with cooperative funds supplied by the State Game Department and several sheepmen, according to District Agent Everett M. Mercer. During January hunters removed a few resident killer coyotes that had taken a toll of more than 30 registered Hereford calves in Cochise County, Ariz., in 1937. Since February 2, the rancher, whose calves were killed, has reported no further losses.

Hunter Gets Third Litter from Den.--District Agent John Finley, of the Washington District, reports that Hunter Jack Teague has taken a litter of coyote puppies from the same den on a ranch in eastern Grant County for three consecutive years. Repeated use of a den by coyotes after the litters have been taken is regarded as unusual.

Counties Cooperative in Predator Control.--By jointly contributing half of one Bureau hunter's salary, Carroll County, Ark., and Barry County, Mo., are continuing their cooperative predator-control work for 90 more days. The work was resumed on April 26. Previously the two counties had employed a hunter on a cooperative basis from December 1 to March 31. Another hunter, according to District Agent A. E. Gray, of the Oklahoma District, was also assigned on April 25 to cooperative work in Camden County, Mo.

Cooperative predator-control work conducted in Boone County, Ark., during February and April was made possible by cooperative funds contributed by individual farmers and stockmen.

Ground Squirrel Carries Sylvatic Plague.--Four positive cases of sylvatic plague, two each in Union and Baker Counties, Oreg., were recently discovered by the U. S. Public Health Service, according to information received by District Agent Roy Fugate of the Oregon District. The carrier in all four cases was the Oregon ground squirrel. This is the first time, so far as known, that outbreaks of this plague have occurred in these counties.

Receives M. S. Degree.--District Agent Ernest M. Mills, stationed at Amherst, Mass., has received an M. S. degree from the Massachusetts State College, in recognition of his work on canned rat bait. Minor subjects studied in working for the degree included deer-control, field mouse problems, and ecology of woodchucks. Mr. Mills has also been appointed to the college staff as adjunct professor of biology.

Evasive Wolf Captured.--An old and destructive wolf that had evaded capture several years was taken by Hunter Silas J. Nolan on May 8, in southern LeFlore County, Okla., according to a report from District Agent Gray. During the past two years Mr. Nolan had trailed the animal over an area about 25 miles square. It also had eluded six other trappers in the past 7 years. Recently Mr. Nolan learned from the wolf's tracks that it had lost a front foot, and following this clue managed to catch the animal in a trap.

Experiment With Chemical Fumigant.--Successful results with granular calcium cyanide as a fumigant in rodent control were obtained in experiments in the Apache National Forest, N. Mex., according to District Agent John C. Gatlin, of the New Mexico District. Results thus far indicate that this chemical is more effective than carbon bisulphide.

Mr. Gatlin also reports that prairie dog control operations being conducted in cooperation with the Division of Grazing, Department of Interior, are well under way in grazing district No. 6. This work is being financed from funds that are returned to the grazing districts for range improvement.

Confer on Pocket Gopher Control.--Wm. C. Oestreich, of Albuquerque, N. Mex., representing the Middle Rio Grande Conservancy District, conferred with members of the Division on May 4 about plans for beginning a cooperative pocket gopher control project in the district, which includes lands contiguous to the Rio Grande for 40 miles north of Albuquerque and 110 miles south. Pocket gophers frequently damage such areas by tunneling and burrowing in ditches, dikes, and dams.

Organize Predator Control Committee.--Members of the State Livestock Associations and other interested organizations met in the office of District Agent Adolph S. Hamm, of the Wyoming District in Cheyenne, on April 11 and organized an advisory committee on predator control. This action follows the recommendation made by the National Woolgrowers Association at its last annual convention. The committee hopes to assist in correlating all control activities within the State.

Plans Coyote Study.--F. E. Garlough, director of the Control Methods Research Laboratory, Denver, Colo., is planning further coyote studies to aid field workers directing control operations. Investigations are to be made relative to density of populations, special denning areas, and census of dens, as well as the relation between distribution of coyotes and wild animals, domestic stock, and character of country. The Wyoming control district is cooperating in the studies.

Addresses College Students.--District Agent Louis Knowles, of the Dakota District, reports that Junior District Agent Robert A. Rowe recently addressed the student body of the South Dakota State College on "The Biological Survey as Related to Conservation, with Particular Emphasis on Rodent Control."

Miss Bertha Benson Dies.--Word of the recent death of Miss Bertha Benson, secretary of the New Mexico Cattle Growers' Association for more than 20 years, at Albuquerque, N. Mex., has been received. Miss Benson was active in obtaining State legislation authorizing cooperative predator- and rodent-control projects and in assisting the Bureau in beginning the projects. Members of the Bureau's Albuquerque staff attended the funeral.

Filipino Given Information on Rat Control.--This Division recently answered a request from a farmer in the San Jose Mindoso section of the Philippine Islands for information on the Bureau's methods of controlling rats. In his letter the farmer said, "ten millions of rats...are destroying all the rice plantations."

CONSTRUCTION AND C.C.C. OPERATIONS

Visits Midwest Refuges.--During May, Mr. Terhune inspected C.C.C. camps on refuges in Regions 4 (West Central) and 9 (Plains), and visited regional offices in Omaha, Nebr., and Des Moines, Iowa. Camps visited included those on Mud Lake and Tamarac Migratory Waterfowl Refuges, Minn.; five on North Dakota refuges; Medicine Lake Migratory Waterfowl Refuge, Mont.; two South Dakota camps; Swan Lake Migratory Waterfowl Refuge, Mo.; and Valentine Migratory Waterfowl Refuge and Fort Niobrara Game Preserve, Nebr.

Inspects Camps.--During April, P. S. Munk Pedersen inspected C.C.C. camps at the White River Migratory Waterfowl Refuge, Ark., the Wichita Mountains Wildlife Refuge, Okla., and the Swan Lake Migratory Waterfowl Refuge, Mo. At Omaha, Nebr., and Des Moines, Iowa, he conferred with the regional directors, and before returning to Washington inspected the new headquarters buildings at the Chautauqua Migratory Waterfowl Refuge, Ill.

Inspects Back Bay Camp.--After attending the State Safety Meeting at Norfolk, Va., on June 3 and 4, R. O. Gustafson inspected the C.C.C. camp at the Back Bay Migratory Waterfowl Refuge near Pungo. The C.C.C. enrollees had moved into their permanent quarters the day before he arrived. Since their arrival at the refuge early in April they had been living in tents. On June 5, Mr. Gustafson inspected the camp equipment at the Pea Island Migratory Waterfowl Refuge near Manteo, N. C.

Camp to Remain.--Panther Creek Camp BF-2 on the Wichita Mountains Wildlife Refuge, Okla., originally scheduled to be evacuated May 31, will be continued until September 30. Des Lacs Camp BF-3, N. Dak., was evacuated on June 4.

New Employees.--Miss Evelyn Scott and John M. Baer joined the Division during May as junior-clerk and draftsman, respectively.

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THE SURVEY

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GENERAL NOTES

Tells Radio Audience of Wildlife Problems.—Following a dramatic presentation of events in American wildlife history, broadcast by the Mutual Broadcasting System on July 21, Dr. Gabrielson pointed out current problems in wildlife conservation.

"It's an easy thing," he said, "to wish for the return of the days when millions of buffalo roamed our plains and the sky-darkening flocks of waterfowl dropped into our marshes. It is an easy thing, also, to say, 'the evil that men do lives after them,' and blame our troubles today on the mistakes of those who have preceded us. The hard thing to do is to act wisely in our own times, correct our own mistakes, and work for a better future—even though this may mean sacrifice on our part."

The broadcast, entitled "The Pageant of American Wildlife", was an anniversary celebration of the American Wildlife Institute.

Broadcasts on New Regulations.—Following the announcement of amendments to the Migratory Bird Treaty Act regulations, Dr. Gabrielson discussed the changes and the policies involved for two nation-wide radio audiences. On July 24, he participated in a dialogue with C. M. Palmer, Jr., of the American Wildlife Institute during one of the Institute's regular Sunday noon broadcasts by the Mutual Broadcasting System, and on July 25, he spoke on the National Farm and Home Hour.

First Federal-Aid Project Approved.—On July 23, Dr. Gabrielson approved the first project under the new Federal-State cooperative program for wildlife restoration. Allotments of \$7,500 of Federal funds and \$2,500 in State money are provided for the construction of an additional 5-mile dike and necessary water-control structures for impounding fresh water from the Weber River, in Weber County, Utah, for the use of waterfowl, and to keep heavy concentrations of salt in Great Salt Lake from entering the area. The State Game Department has been carrying on considerable development in this area, with labor supplied largely by the Bureau's Weber River C. C. C. camp, and with drag lines and other heavy equipment supplied by the Division of Wildlife Refuges. Thousands of waterfowl have died in this area from botulism, and with the construction of the dike and other structures it is hoped to eliminate the cause.

Motion pictures and still photographs of Chief Gabrielson approving the project were taken for Bureau use. These also show the Chief and Albert M. Day, chief of the Bureau's new Division of Federal Aid in

Wildlife Restoration receiving congratulations from Carl Shoemaker, secretary of the National Wildlife Federation, and C. M. Palmer, Jr., assistant secretary of the American Wildlife Institute.

Visits Western Refuges and Field Stations.---Associate Chief Henderson inspected several waterfowl refuges and big-game preserves, the rodent bait supply depot at Pocatello, Idaho, and the U. S. Rabbit Experiment Station, at Fontana, Calif., during his western field trip from July 1 to 27. At Berkeley, Calif., he attended the annual meeting of the American Society of Mammalogists. Refuges visited by Mr. Henderson included the Upper Mississippi River Wildlife and Fish Refuge, Wis. and Minn.; Mud Lake and Tamarac Migratory Waterfowl Refuges, Minn.; Waubay, Sand Lake, and Lacreek Migratory Waterfowl Refuges, S.Dak. Valentine Migratory Waterfowl Refuge and Fort Niobrara Game Preserve, Nebr.; Elk Refuge, Nev; and the Bear River Migratory Bird Refuge, Utah.

Survey Scientist Given Honor.---Publication in August of the sixth edition of "American Men of Science" brings to attention the recognition in the various editions of that work of Biological Survey men as leaders among North American scientists. Since the inauguration of the series, an asterisk accompanying the name of the field of study of a research worker has been used to indicate recognition as one of about 1,000 leaders. The number of asterisks is further subdivided by subjects and as 150 are allotted to zoology (the only division including Biological Survey employees), each award in that science indicate appraisal of the recipient as one of 150 leading zoologists of the continent. Selection of names to be starred in the first two editions (1906 and 1910) was made from lists provided by 10 leading students of each science. In all later editions, selection was by mail ballot by those already starred and runners-up, groups numbering about 2,000 in all and yielding a total of about a thousand votes. A further circumstance bearing upon the significance of these awards is that while the number starred has remained about the same, namely at 1,000, the total roster of scientists included in the directory has increased from 4,000 in the first edition (1906) to 28,000 in the sixth (1938), apparently, therefore, it is sevenfold more difficult to attain the recognition now than it was in 1906.

Scientists receiving the star who have been members of the Biological Survey are listed below with references to edition and date of the award and a note as to whether it was made before, during, or after employment in the Survey.

<u>Scientist</u>	<u>Edition and date</u>	<u>Relation to employment</u>	<u>Scientist</u>	<u>Edition and date</u>	<u>Relation to employment</u>
Field, George W.	1-1906	Before	Nelson, E. W.	3-1921	During
Merriam, C. Hart	1-1906	During	Osgood, Wilfred H.	4-1927	After
Bailey, Vernon	1-1906	During	Wetmore, Alexander	4-1927	After
Fisher, Walter K.	3-1921	After	McAtee, W. L.	6-1938	During
Miller, Gerrit S., Jr.	3-1921	After			

The awards to Field (now deceased), Fisher, and Miller (the last two strictly temporary employees) had no connection with their services in the Biological Survey. That of Osgood, after resignation, probably got a good deal of its impetus from his Survey accomplishments, particularly North American Fauna No. 28, "Revision of the Mice of the American Genus *Peromyscus*," 1909; and that of Wetmore may have been partly based on his Biological Survey record. The others were to career-men in the Survey; of the four, one (Nelson) is deceased, and of the three survivors, only one (McAtee) is still in active service.

Dr. Jackson Heads Mammalogists Society.--Three members of the Survey's Division of Wildlife Research were elected officers of the American Society of Mammalogists at its annual meeting held July 19 to 23 at the University of California at Berkeley. Dr. H. H. T. Jackson is the society's new president, succeeding Dr. Joseph Grinnell, of the University of California. Dr. Walter P. Taylor, leader of the Texas Cooperative Wildlife Research Unit, was elected vice-president, and Miss Viola S. Schantz was re-elected treasurer. W. B. Davis, of College Station, Tex., a collaborator of the Bureau, was named corresponding secretary.

A. H. Howell, also of the Division of Wildlife Research, was appointed editor of the society's official publication, *The Journal of Mammalogy*, and E. A. Preble, retired from the Bureau, was named on the new board of directors.

Papers presented at the meeting by Survey members were as follows: "Significance of Numbers in Mammalian Ecology," by Dr. Taylor; "Food Habits of Peg-legged Coyotes," Charles C. Sperry; and "Notes on Winter Food of the Black Bear in the George Washington National Forest," by Dr. Clarence Cottam, a paper of which A. L. Nelson, of the Section of Food Habits, and T. B. Clarke, of the U. S. Forest Service, were co-authors. Enlarged photographs of mammals were supplied by the Bureau for the society's photographic art exhibit, and several others were exhibited individually by Bureau members.

Associate Chief Henderson also was present at the meeting and other members of the Section of Wildlife Surveys attending were: Dr. D. I. Rasmussen, leader of the Utah Research Unit; Arthur S. Einarsen, leader of the Oregon Research Unit; William Marshall, stationed at Logan, Utah; A. W. Moore, Portland, Oreg.; and E. E. Horn, Berkeley, Calif. Clarence F. Smith and Larry W. Saylor, of the Food Habits Section, attended while on annual leave in California.

New Division Organized.--The Division of Federal Aid in Wildlife Restoration was created on July 1, to supervise and correlate all activities in connection with the administration of the Pittman-Robertson Act, for which Congress appropriated \$1,000,000 for this fiscal year. Personnel of other divisions and of the Bureau of Agricultural Engineering are cooperating with the States in the selection, acquisition, and development of restoration projects.

Albert M. Day, formerly in charge of the Section of Predator and Rodent Control, is chief of the new division. He joined the Survey in 1919 as a field assistant in rodent control in Wyoming, and later was in charge of cooperative work for controlling injurious mammals in Wyoming and part time in Nebraska. After transferring in 1930 to the Bureau's Washington office, Mr. Day was placed in charge of the Section of Predator and Rodent Control. In this work, he became well-acquainted with wildlife problems and was frequently called upon by State game officials for advice. He holds a B. S. degree from the University of Wyoming.

The new division has three sections, Lands and Structures, Program Planning, and Apportionments and Statistics. Robert M. Rutherford, formerly in charge of the Section of Appraisals and Negotiations in the Division of Land Acquisition, will be in charge of the Section of Lands and Structures. He will work closely with the State game departments in acquiring and developing areas for wildlife.

J. Paul Miller, biologist in the Division of Wildlife Research, was named an assistant in the Section of Program Planning. He has conducted wildlife research studies in New England, and for the past two years has been making a national survey of wildlife in relation to land use.

Guy W. Lane, an assistant in the Section of Law Enforcement, Division of Game Management, is in charge of the Section of Apportionment and Statistics. Mrs. Eva C. Elledge, of the Section of Predator and Rodent Control, has been named chief clerk of the new Division. Other personnel now employed includes Mrs. May R. Jeffries, Mrs. Sylvia P. Kershner, and Mrs. M. R. Wenstrom.

T. B. Murray, Idaho district agent in charge of predator and rodent control for the past 10 years, has been detailed to the new division to assist in Regions 1 and 2. J. C. Savage, of the Division of Game Management, was appointed assistant regional inspector on August 1, to inspect State project proposals in Region 7. J. Stokely Ligon, formerly connected with the Bureau and a game technician for the New Mexico State Game Department since 1927, was reinstated on August 15, as regional inspector to work in Region 3. Wm. J. Howard, formerly of the Wildlife Division of the U. S. Park Service, reported for duty on September 1, as associate regional inspector in Region 7.

Regional Offices Moved.--The headquarters of Regional Director Roy Moore, of Region 5, Southern, were moved during July from State College, Miss., to 1105 Masonic Temple Building, 333 St. Charles Street, New Orleans, La., and during August the office of Regional Director S. B. Locke, of Region 8, Northeastern, was transferred from Portland, Maine, to Rooms 1139-41, Park Square Building, 31 St. James Avenue, Boston, Mass.

ADMINISTRATION

Memoranda to Field Officers.--Following is a list of the memoranda issued in the "Administrative Field Office" (Admin. F. O.) series since the last issue (May-June 1938) of the Survey:

No. 21. Amendment No. 5. Competition in soliciting bids covering cement.
(July 14.)

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- No. 57. Amendment No. 2. Cooperation with State directors for the National Emergency Council. (August 4.)
- No. 88. 2d revision. Renewal and preparation of informal agreements. (June 22.)
- No. 212. Amendment No. 1. Submission of Forms Bi-357 and letter of authorization pay rolls to regional offices Nos. 4,5,6, and 9 instead of the Washington office as heretofore. (June 20.)
- No. 221. Amendment No. 3. Recording and reporting personal-injury and property-damage accidents; submission of supplementary narrative reports. (July 7.)
- No. 237. Advanced billing of accounts receivable and use of bill for collection Forms Bi-1496. (June 24.)
- No. 238. Revised accounting classification of all expenditures. (June 28.)
- No. 239. Cooperation with Division of Federal Aid in Wildlife Restoration on projects proposed by States. (July 13.)
- No. 240. Advance purchases of essential commodities. (July 25.)
- No. 241. Supersedes No. 225. Legal holidays. (August 4.)
- No. 242. Political campaign contributions. (August 4.)

The following memoranda to field officers have been issued in "Contracts" series:

- No. 16. Amendment No. 2. Mandatory contract for tire chains, Class 8, Supplement No. 2, covering bar-reinforced type of antiskid chain. (June 17.)
- No. 29. Amendment No. 1. Mandatory contract concerning procurement of machine tools, small machinery, and accessories and parts,--Class 40, to February 28, 1939. (July 11.)
- (No. 31. No memorandum issued bearing this number.)
- No. 32. Contract for service-station deliveries in Western States of gasoline and lubricating oil for the period July 1, 1938, to June 30, 1939, inclusive. (June 24.)
- No. 32. Supplement No. 1. Contract for service-station deliveries in Northeastern States of gasoline, lubricating oil, and lubrication service for the period July 1, to September 30, 1938, inclusive. (July 7.)
- No. 32. Supplement No. 2. Contract for service-station deliveries in Western States and Central States of gasoline and lubricating oil for the period July 1, 1938, to June 30, 1939, inclusive. (July 13.)
- No. 32. Supplement No. 3. Contract for service-station deliveries in Ohio of gasoline and lubricating oil for the period July 1, to September 30, 1938. (July 28.)
- No. 33. Procurement of asbestos gear and track-roller lubricant, during period June 20, 1938, to March 31, 1939,--Class 14. (July 14.)
- No. 34. Procurement of repair parts for construction and road-building machinery (including air compressors, graders, shovels, terracers, etc.), Class 66, during the period July 1 to December 31, 1938. (July 11.)

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- No. 35. Mandatory contracts for the procurement of exploders, dynamite blasting plugs, and blasting powder, July 1, 1938, to June 30, 1939. (Class 4, Supplement No. 1.) (July 18.)
- No. 36. Procurement of lubricating-oil requirements (one gallon or more) under Navy Department contracts during the fiscal year 1939. (July 26.)
- No. 37. (1) Contracts for repair of office machines for the period July 1, 1938, to June 30, 1939 (Class 54). (2) Report required on expenditures for cleaning, repairing, and overhauling of adding and computing machines during the period July 1 to December 31, 1938. (July 28.)
- No. 38. Clearance for open market purchase of spark plugs for use in Government-owned marine engines for the period ending August 31, 1938. (August 3.)

PUBLIC RELATIONS

Broadcasts Continue.--Continuing a series on the nation-wide network of the National Farm and Home Hour, Howard Zahniser discussed the new program of Federal aid to States in wildlife restoration, on June 23. On the succeeding Thursdays, June 30 and July 7, he spoke on "Nesting Time on the Bear River Refuge," and on "Wildlife Studies in Oregon." The following week he talked about nesting islands on bird refuges on July 13, and on July 14 participated with others in a discussion of C. C. C. work. Owing to cancellations, the next broadcast in the Thursday series was on August 4 when Mr. Zahniser discussed the crow. On August 11, he participated with John Baker of the Radio Service, in a dialogue on refuges in the Souris River region of North Dakota, and on August 25 continued a discussion of these refuges. Though subject to cancellation, owing to other Departmental needs, the Thursday series is scheduled to continue on the programs starting at 11:30 a.m. E.S.T. Mr. Zahniser also participated in a dialogue on the crow with C. M. Palmer, Jr., during the program of the American Wildlife Institute, August 21 over the Mutual Broadcasting System.

Serves Temporary Appointment.--Quintan Wood, who began work in the Section of Current and Visual Information, on February 28 as a biological writer completed his temporary appointment late in June, after which he planned to continue his free-lance work for magazines and newspapers. While with the Bureau, he assisted in the preparation of informational material on wildlife research, refuges, and law-enforcement subjects.

Begin W. P. A. Project.--Mrs. Estelle Hoffman, Mrs. Dorothy Alarid, Miss Esther Lendenbaum, and Edmund Stelmach have been assigned by the W. P. A. to the Section of Current and Visual Information to assist on photographic record work. The first three workers are typing data on accumulated card prints and filing them, while Mr. Stelmach is making card prints from accumulated negatives, to complete the information in the files.

Official Publications, copies of which may be obtained from the Division of Public Relations, have been issued as follows:

- Revision of the North American ground squirrels, with a classification of the North American Sciuridae. By Arthur H. Howell, Senior Biologist, Section of Wildlife Surveys, Division of Wildlife Research. North American Fauna No. 56, 256 pp., illus. April 1938. Received May 18.
- Regulations relating to game, land fur animals, and birds in Alaska, 1938-39. Alaska Game Commission Circular No. 15, 32 pp. May 1938. Received June 13.
- Muskrat investigations in Dorchester County, Maryland, 1930-34. By Frank R. Smith, Agent, Section of Fur Resources, Division of Wildlife Research. Circular No. 474, 24 pp., illus. May 1938. Received June 27.
- The reproductive cycle of the coyote. By G. W. D. Hamlett, Agent, Section of Fur Resources, Division of Wildlife Research. Technical Bulletin No. 616, 12 pp., illus. July 1938. Received July 19.
- Cultural and other methods for the control of injurious wildlife. By D. A. Spencer, Assistant Biologist, Division of Predator and Rodent Control. Wildlife Research and Management Leaflet No. 115, 6 pp. June 1938. Received July 19.
- Suggestions for control of coccidiosis in rabbits. By E. L. Vail, Junior Veterinarian, Section of Disease Control, Division of Wildlife Research. Wildlife Research and Management Leaflet No. 116, 1 p. June 1938. Received July 18.
- Protecting orchard trees from deer. By E. M. Mills, Assistant Biologist, Division of Predator and Rodent Control. Wildlife Research and Management Leaflet No. 117, 6 pp., illus. June 1938. Received July 15.
- Mink raising. Prepared in Section of Fur Resources, Division of Wildlife Research. Wildlife Research and Management Leaflet No. 82, 9 pp. Revised June 1938. Received July 19.

Outside Publications.--Articles by members of the Survey appearing in outside publications have been reported as follows:

- Aldous, C. M. (With A. D. Nutting, Forest Specialist, Univ. Maine, junior author.) Wildlife in Maine. Univ. Maine, Col. Agr., Ext. Serv. Bull. 248. 15 pp., illus. June 1938.
- Ashbrook, F. G. Fur smugglers caught. Amer. Fur Breeder 10 (10): 6-7. Apr. 1938. Also, Natl. Fur News, Apr. 1938. p. 9.
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----- A note on the distribution of the two shrews found in Jersey (by T. C. S. Morrison-Scott, Jour. Animal Ecology 6: 284-285, illus., November 1937). (Review.) Auk 55: 577. July 1938.
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Nelson, A. L., and Handley, C. O. Behavior of gray foxes in raiding quail nests. Jour. Wildlife Mgmt. 2: 73-78. July 1938.
Oberholser, H. C. The season (ornithological): Washington, D. C., region. Bird-Lore 40: 150-151. Mar./Apr. 1938.
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----- The bird life of Louisiana. La. Dept. Conserv. Bull. No. 28, 834 pp., illus. June 1938. (Published in cooperation with the Biological Survey.)
Ransom, W. H. Yellow rail recorded in the State of Washington. Murrelet 19: 16. Jan./May 1938.
Scheffer, V. B. Notes on wolverine and fisher in the State of Washington. Murrelet 19: 8-10, illus. Jan. May 1938.
Sheldon, H. P. Guns and game: The nocturnal gunsmith; "Sir Cat" the knowing; follow through; a new savage utility. Country Life and Sportsman 74 (4): 19, 77, illus. Aug. 1938.
Smith, C. F. An injured starling. Auk 55: 540. July 1938.
Zahniser, H. Indoors and out. Nature Mag. 31: 327, 375, 377. June/July 1938.
----- Bringing the outdoors indoors. Natl. Nature News 2 (27): 1, 6, illus. July 18, 1938.

Press and Radio Information and Addresses, copies of which (chiefly in mimeograph) may be obtained from the Division of Public Relations, have been issued as follows:

- Acquisition of 9,895 acres of land for U. S. wildlife refuges approved. Press statement 1967-38. Released June 15.
Federal-State wildlife funds available July 1. Press statement 1989-38. Released June 17.
Illinois hunters fined for shooting ducks over another person's decoys. Press statement 2007-38. Released June 20.
Dove hunters given heavy fine for using gun without a plug. Press statement 2038-38. Released June 23.
"Duck stamp" sales top record set in 1934-35 by first stamp. Press statement 2045-38. Released June 24.

Muskrat study of value to fur farmers. Press statement 12-39. Released July 2.

Federal-State wildlife program to be directed by Albert M. Day. Press statement 14-39. Released July 2.

Duck hunters will have 45-day season this year. Press statement 91-39. Released July 18.

CCC boys improve new Federal waterfowl refuge at Back Bay, Va. Press statement 94-39. Released July 19.

Gabrielson approves first project under Federal-State wildlife plan. Press statement 114-39. Released July 23.

Wheeler Lake in Alabama becomes waterfowl refuge. Press statement 138-39. Released July 27.

Killing protected ducks costs 4 months in jail. Press statement 146-39. Released July 29.

Illegal duck hunting costs Texas club \$500. Press statement 175-39. Released August 4.

Wildlife milestones. Farm Flashes. Released June 24.

Duck hunting rules. Farm Flashes. Released Aug. 1.

New duck "hotel". Farm Flashes. Released Aug. 8.

Inventories of fur farms aim of Biological Survey. Clip Sheet No. 1044. Released July 3.

Elgrass blight found only on Atlantic coast. Clip Sheet No. 1044. Released July 3.

Federal aid for States to restore wildlife. Radio talk by Howard Zahniser, In Charge, Current and Visual Information, Division of Public Relations, National Farm and Home Hour. June 23.

Nesting time on the Bear River Refuge. Radio talk by Howard Zahniser, National Farm and Home Hour. June 30.

Wildlife studies in Oregon. Radio talk by Howard Zahniser, National Farm and Home Hour. July 7.

Nesting islands on bird refuges. Radio talk by Howard Zahniser, National Farm and Home Hour. July 13.

CCC enrollees qualify for advancement. Radio discussion among Morse Salisbury, Office of Information; Howard Zahniser; Sam Broadbent, Forest Service; and Paul Bissell, Soil Conservation Service; National Farm and Home Hour. July 25.

The 1938 waterfowl regulations. Radio talk by Dr. Ira N. Gabrielson, broadcast over the Mutual Broadcasting System, Station WOL, Washington, D. C. July 24.

The new duck hunting rules. Radio talk by Dr. Ira N. Gabrielson, National Farm and Home Hour. July 25.

The crow and the grasshopper. Radio talk by Howard Zahniser, National Farm and Home Hour. Aug. 4.

Waterfowl and the Souris country. Radio discussion by John Baker. Radio Service, and Howard Zahniser, National Farm and Home Hour. August 11.

WILDLIFE RESEARCH

Broadcast on Wildlife Research.--Several members of the Division of Wildlife Research have participated in American Wildlife Institute Programs broadcast by the Mutual Broadcasting System. Dr. Bell, chief of the division, spoke on wild rabbits in a radio dialogue on July 31. Other members who took part in these programs and subjects discussed were as follows: E. A. Goldman, "Animal Oddities," June 19; Leo K. Couch, "Wildlife Research," July 3; and F. M. Uhler, "Bird Feeding Habits," August 7.

On August 19, Frank G. Ashbrook participated in a radio discussion on "How to Select Furs" that was broadcast by the National Broadcasting Company during the program of the Consumers' Counsel, Agricultural Adjustment Administration.

Prepare Wildlife Conservation Course.--Preliminary work has been undertaken in the Division of Wildlife Research on a W. P. A. project for the development of a sample course of study in wildlife conservation for elementary schools. Dr. Eber W. Jeffery, assigned to this work, is determining a series of teacher-pupil objectives and studying reports from State conservation and educational departments on teaching this subject.

Wildlife Surveys

Returns From Field Trip.--Dr. H. H. T. Jackson returned on August 18 from a two-months' field trip to the Northwest. His first stop was in Minnesota where he conferred with Shaler E. Aldous of the section staff, and also with officials and scientists of the Lake States Forest Experiment Station and the University of Minnesota. In Washington, he visited the Turnbull Migratory Waterfowl Refuge, and in the western part of the State conferred with members of the Survey, Forest Service, State Game Commission, and the University of Washington, spending several days with Dr. Victor B. Scheffer on a field trip to the Olympic Peninsula and Cascade Mountains. The next 10 days he spent in Oregon with A. W. Moore and A. S. Einarsen in inspecting various field projects, particularly the deer problem on the Murderers Creek area, the farm game study in Willamette Valley, and the experimental rodent-plot investigations on Cascade Head Experimental Forest and Ochoco National Forest. From there, Dr. Jackson went to the Malheur Migratory Bird Refuge and other important wildlife areas in the State. On July 8, he gave a short talk on Oregon game matters at a meeting of the State game commissioners. At the State College, the work of the Oregon cooperative research unit was reviewed and conferences held with cooperators.

On July 13, E. E. Horn met Dr. Jackson at Klamath Falls, Oreg., for a visit to the Tule Lake Refuge and inspection of forest zoology projects in California. Both men attended the meetings of the American Society of Mammalogists at Berkeley, Calif., July 19 to 23. Dr. Jackson presided at several sessions, and was elected president for the ensuing year. On July 21 he spoke at the annual banquet of the society on "The Organization and History of the Mammal Society." Following the Mammalogists' meeting, he inspected the field work on the San Joaquin Experimental Range, Mono Basin, and other places in southern California, and conferred with members of several museums and research institutions.

In Utah, Dr. Jackson visited cooperators at the State College at Logan, the Forest Service at Ogden, the State Game Commission at Salt Lake City, as

well as university men and Survey employees at these towns and elsewhere. He spent a day at the Bear River Migratory Bird Refuge, and with Dr. D. I. Rasmussen and Wm. H. Marshall inspected various research projects of this section, including field work in the Logan Mountains, Strawberry Valley, Uinta Mountains, Wasatch Plateau, Fish Lake Mountains, Great Basin Range Experiment Station, and Beaver Mountains. At the place last named they took part in a 4-H Club conservation camp meeting. He spent a full day investigating wild-life conditions on the Kaibab Plateau, Ariz.

Dr. Jackson also stopped a few days with Olaus J. Murie in the Jackson Hole section, Wyo., and with him and Adolph Murie, of the National Park Service, inspected several important wildlife areas, including the Elk Refuge, Sentinal Butte, Jackson Hole, Gros Ventre Valley, and the wildlife areas of Yellowstone Park.

Cooperative Book on Louisiana Birds Published.--More than 800 pages that describe bird life in Louisiana are contained in a new work prepared by Dr. H. C. Oberholser and recently published by the Louisiana Department of Conservation in cooperation with the Bureau. Plans for the publication were projected 5 years ago, and as a preliminary step an ornithological survey was made of the State by the author and James Nelson Gowanloch, chief biologist of the State Conservation Department.

In a foreword to the bulletin, Commissioner Wm. G. Rankin, of the Louisiana Department of Conservation, says that Dr. Oberholser "has in this bulletin gathered together all available published and unpublished records relating to the birds of the State, and has included also a great number of records, some of them unique, which have been the result of field work by many members of the Department of Conservation."

The bulletin contains numerous illustrations, some in color, a comprehensive index, a bibliography, a calendar of bird migration, material on the migration and protection of birds, and individual discussions of each of the 430 recognized species and subspecies of birds of the State and of 22 other fauna considered hypothetical.

Attends Ornithological Congress in France.--Dr. Lawrence B. Hicks, leader of the Ohio Cooperative Wildlife Research Unit, represented the Bureau at the ninth International Ornithological Congress, held at Rouen, France, May 8 to 18. Before returning to this country on June 9, he visited points along the Mediterranean Sea, Italy, Switzerland, Germany, Holland, and England, in the course of which he recorded 188 species of birds and located nests of 44 species. Netherlands, France, and the Rhine country of Germany are outstanding in their wildlife-management activities, reports Dr. Hicks. He found coots, moorhens, ducks, herons, and other large wild birds nesting in abundance in small water areas in and near areas of dense human population. He noted pheasants common and rabbits abundant in southern England, and in southern France observed the rare Stove grouse.

Find Size of Aspen Beaver Prefer as Food.--Investigations by the Maine Research Unit indicate that beavers in the wild seldom peel aspens larger

than 4 1/2 inches in diameter. Similar results have been obtained by the research unit with captive beavers.

Peeling and weighing studies by D. O'Brien, graduate student of the research unit, show that beavers waste at least 40 percent of the trees that are larger than 4 1/2 inches and that 4-inch trees were well consumed. The fact that it takes at least 20 years for an aspen to develop to a diameter of 4 inches, suggests that areas of these trees for the production of beaver food should be managed on a 20-year rotation basis.

Released Moose Improves.--Clarence M. Aldous, leader of the Maine Research Unit, reports that the two-year-old cow moose released near Hudson, Maine, on April 8, after treatment for sickness, visited the point of release late in May, appeared to be in good condition, and chased him out of the pasture when he tried to photograph her.

Study Status of Texas Bighorn.--Dr. Walter P. Taylor, leader of the Texas Research Unit, and Charles H. Rouse, of the Wichita Mountains Wildlife Refuge, Okla., spent May 8 to 20 in Cubertson County in western Texas, cooperating with Robert Snow and Curtis McElroy, of the Texas Game, Fish, and Oyster Commission, in studying the Texas bighorn sheep. Seven bighorns, mostly in the Sierra Diablo-Beech Mountains, were seen. No fresh signs of mountain lions, which are commonly regarded as predators of these sheep, were observed.

As opinion regarding the status of these animals in the trans-Pecos area varies greatly, it will be necessary to recheck the area for more accurate information. An attempt will be made to determine factors that limit their abundance. Mr. Snow has been assigned by the game commission to investigate these bighorns and will be joined by W. B. Davis, of the Texas Research Unit, in a study to be made during August and September.

Reports Good Nesting Results.--Of 177 nests of little blue herons and snowy egrets in water privet and button willow bushes at the southeast end of Eagle Lake, Colorado County, Tex., only 9 were destroyed this season, according to Dr. Taylor. Fluctuating water level, snakes, grackles, and competition among nesting birds for nest materials and sites accounted for the losses. Hatching reached its peak about May 20. Food of young herons and egrets in April and early in May consisted largely of crawfish; from May 10 to 25, of top minnows, shad, tadpoles, small frogs, dragon-fly larvae, grasshoppers, crawfish, and some bass and white perch; and after June 1 grasshoppers were the chief food.

Attend Wildlife Federation Meeting.--Dr. Taylor was chairman of the wildlife research results program at the annual meeting of the Texas Wildlife Federation held at Galveston, June 10 and 11. Several other members of the Texas Research Unit also participated in the meeting.

Reports on Quail Studies.--Bobwhite quail were generally distributed over Colorado County, Tex., at nesting time, but the heaviest concentra-

tions occurred within half a mile of areas used last winter, reports V. W. Lehmann, graduate student at the Texas Research Unit. The peak of the nesting season in Colorado, Washington, Austin, Walker, San Jacinto, and Liberty Counties was reached in June. The first young quail in Colorado County were observed on May 20. Of the 16 nests under observation, 5 were destroyed by snakes and 6 from other causes. Three hatched successfully and two were about ready to hatch.

Compile Data on Big Game Sex Ratio.---Data obtained last year on Oregon's big-game animals are being assembled for correlation with sex ratio reports of the last two years, reports Arthur S. Einarsen, leader of the Oregon Research Unit. Sex ratio checks made in every county of the State show that antelope, fully protected for nearly 25 years, have struck a sex balance. Although the sex ratio in the case of the mule deer is in direct proportion to hunting pressure, there is no record of a critical unbalanced condition. Information obtained in these studies will be used by the State Game Commission in its big-game management program.

Checks Grouse Nesting Conditions.---Lloyd Gunther, a senior student employed by the Utah Research Unit, found 108 sage grouse nests this season in checking nesting conditions in the Strawberry Valley area. Considerable predation by coyotes occurred in May, but little, if any, by hawks. These birds were preying on ground squirrels at that time. Sylvatic plague was discovered in the valley last year and apparently is still present, as sick and dead ground squirrels are being found.

Addresses College Students.---Dr. Victor B. Scheffer, stationed at Seattle, Wash., gave an illustrated lecture at the Pacific Lutheran College, Parkland, Wash., on May 28, on the Bureau's expedition to the Aleutian Islands. He spent May 14 to 16 in Upper Skagit Valley, Wash., inspecting the recreation area being developed by the City of Seattle, and conferring with city officials on the management of a small menagerie there. He recommended that foreign species be gradually replaced by native forms of wildlife. The menagerie now has about 30 species of exotic birds and mammals.

Studies Dove Nesting Habits.---Elliott McClure, graduate student at the Iowa Research Unit, studying the nesting habits of mourning doves, reported at the end of June records for 640 nests and that a slump in nesting activity late in June was probably caused by unusually hot weather.

Visit Mammal Laboratory.---The following visitors recently studied specimens and records at the mammal laboratory, or conferred with members of the Bureau for obtaining information: Richard Borden, Fall River, Mass.; Mr. and Mrs. A. H. Schliem, Evansville, Wis.; Chas. M. Elliott, State Department of Natural Resources, Atlanta, Ga.; C. C. Sanborn, Field Museum of Natural History, Chicago, Ill.; and C. Gregor Rhower, University of Colorado Museum, Boulder, Colo.

Food Habits Research

Inspect Proposed Refuge Areas.--Accompanying J. Clark Salyer, chief of the Division of Wildlife Refuges, Dr. Clarence Cottam and Dr. Warren S. Bourn, spent two days during June examining several proposed refuge areas in New Jersey. Dr. Cottam noted some improvement in the eelgrass situation in the Barnegat Bay section.

Visit National Forest.--A. L. Nelson and R. H. Gensch spent June 23 to 25, inspecting wildlife development work on the Big Levels Wildlife Refuge in the George Washington National Forest, Va., particularly the clearing work and its influence on ruffed grouse food resources. Arrangements were also made for continuing the ruffed grouse, wild turkey, and bear food habits studies begun in 1935.

Study Effects of Mosquito Drainage.--On June 6, Dr. Warren S. Bourn and Larry W. Saylor, accompanied by several State fish and game department officials, inspected several W. P. A. mosquito-control projects in the vicinity of Philadelphia, Pa. The two then went to the Bombay Hook Refuge area, Del., where they made further studies of the effects of mosquito-control drainage on wildlife food resources. They found that three-square and other valuable marsh plants are rapidly being replaced in ditched areas by much less desirable plants. Low rainfall last spring, they said, also aided this condition.

Inspect Mosquito Control Project.--Dr. Bourn and W. F. Kubichek, of the Division of Wildlife Refuges, spent July 19 to 25, inspecting the work of the Des Plaines Valley Mosquito Abatement District, Ill., in correlating mosquito control with marsh conservation. Dr. Bourn reports that areas for wildlife are being developed in the marshes of the Des Plaines Valley by the construction of central permanent ponds with radiating lateral ditches that collect and drain water into them. Motion pictures of the areas were taken.

Assists State in Mapping Water Policy.--Dr. Bourn assisted the Missouri State Planning Board at its meetings at Jefferson City on July 29 and 30, in drafting a water policy for long-time management of the State's aquatic resources. Before returning to Washington, Dr. Bourn inspected proposed W. P. A. drainage projects in Kentucky and southern Illinois.

Confer on Wildlife Food Plant Nursery.--F. M. Uhler spent July 22 to 25, conferring with wildlife specialists of the Forest Service in Milwaukee, Wis., and Ironwood, Mich., and on the Ottawa National Forest, on the proposed development of an aquatic and marsh plant nursery. Several lakes in the vicinity of Watersmeet, Mich., were studied as probable sources of propagative materials. Mr. Uhler observed broods of lesser scaup ducks on most of the shallow lakes in that area.

Begin Food-Production Studies.--On July 22, Neil Hotchkiss conferred at the Blackwater Migratory Bird Refuge, Md., with Frank G. Ashbrook, Chas. E. Kellogg, and Dr. H. L. Dozier, of the Fur Resources Section, on plans for the establishment of quadrats in the principal types of marsh vegetation on the refuge and for studying from year to year changes occurring in the production of food for muskrats and waterfowl. Information obtained in the studies will be used in managing the areas for wildlife. Ten 100-foot square quadrats established in stands of three-square, saltmarsh cordgrass, salt-meadow cordgrass, needle rush, narrowleaf cattail, sago pondweed, and other marsh plants will be mapped in August, and each succeeding year, as to species and relative density. Water levels, variation in salinity, and destruction of vegetation by wildlife will be checked to see what effect they have on plant life. Preliminary plans for the study were made at a conference held at the refuge on June 27. F. M. Uhler participated and also continued his study of the experimental plots in which various chemicals have been used to control undesirable marsh plants.

Inspect Waterfowl Refuge.--On August 2, Mr. Hotchkiss, accompanied by Dr. Logan J. Bennett, of the Pennsylvania Cooperative Wildlife Research Unit, and Randall McClain, wildlife technician of the Allegheny National Forest, inspected the Beaver Meadows State Waterfowl Refuge, Forest County, Pa. Natural food plant resources and the bottom soil and water were checked, after which a program of controlled planting of suitable waterfowl food and cover plants was outlined for next spring. On returning to Washington, Mr. Hotchkiss inspected parts of the Pymatuning State Refuge, at Linesville, Pa., to observe the results of duck-food plantings made there last summer by the State game commission.

Study Effects of Spraying on Birdlife.--Since early in May, Miss Phoebe Knappen and F. M. May have studied the effects of poison sprays on birdlife at the Department's horticultural and foreign plant introduction stations near Beltsville and Bell, Md., and at the Patuxent Research Refuge. Censuses of the faunal population were made before and after spraying, and the nest histories in the sprayed areas checked. At the Patuxent Refuge, the orchards at the Kluckhohn place and Snowden Hall were sprayed five times at spaced intervals with lead arsenate and a mixed lead arsenate-lime sulphur solution, respectively. It appears that birds were more abundant in the orchards after spraying, possibly because of seasonal influxes, more food being made available under the trees by the trampling of grass, or possibly because some birds prefer to live in places near man. Various measures for determining the effect of spraying the nest, eggs, and birds on nests were tried. All the young came off safely, except where predators had interfered. Nest boxes put up in the orchards at the refuge as late as the middle of June were accepted by wrens and bluebirds. Plans are being made to continue the spray study next season under other controlled conditions.

Studies Dove's Breeding Period.--Johnson A. Neff, stationed at Sacramento, Calif., has had under observation more than 470 nests of white-winged doves in Arizona in studying the bird's breeding period. Most of the birds, he reports, appear to nest early in July. Mr. Neff will continue his studies through August for determining the length of the breeding period. Information on this subject is needed for prescribing hunting season dates that will be consistent with sound management practices.

On July 29, Mr. Neff talked on the white-winged dove study before the Phoenix Chapter of the Arizona Sportsmen's Association.

Maggots Attack Young Doves.--Early in June Mr. Neff confirmed a report that maggots (Sarcophagidae), infesting nests of mourning doves attack young birds. The maggots, Mr. Neff states, are apparently attracted to the nests by feces, but turn to the young birds for additional sustenance. Injury to the legs was conspicuous in some instances.

Addresses Izaak Walton League Meeting.--E. R. Kalmbach, of the Denver Food Habits Laboratory, explained how the Bureau's research is improving its waterfowl refuges in a talk given June 15 before the meeting of the Izaak Walton League, at Newcastle, Wyo.

Organizes Waterfowl Nesting Studies.--During May, June, and July, Mr. Kalmbach continued studies of waterfowl-nest mortality that he began in Canada in 1934. He has assisted in correlating studies being made on the Valentine and Crescent Lake Refuges in Nebraska, the Bear River Refuge in Utah, and the Malheur Refuge in Oregon. Investigations on the Valentine and Crescent Lake Refuges indicate that the bullsnake may be a significant factor in nest losses.

Pollute Water Supply.--On July 9, Robert C. McClanahan and R. H. Gensch visited Smith Island, Va., where barn swallows were reported to be polluting the water supply of the Coast Guard station by dropping mud and feces on the buildings. Water caught from the roofs during rains is the main source of fresh water on the island. As the Coast Guard buildings are suited for barn swallow nesting, the two Bureau members recommended the removal of moldings and other ledges from beneath the eaves to eliminate nesting sites.

Complete Goose-nesting Studies.--During May, C. S. Williams and A. H. Trowbridge completed field observations on more than 150 nests of Canada geese on and in the vicinity of the Bear River Migratory Bird Refuge, Utah. A marked change in the feeding habits of almost the entire goose population occurred during the month, when the birds moved from the silt lands to the units of the refuge where pond weeds had attained sufficient growth to be reached by the birds without diving. The refuge units at that time afforded the best local sites for rearing the young and for moulting. Duck-nesting studies were well under way by the end of May,

and 500 or more nest histories will have been obtained by the close of the season.

Distribution and Migration of Birds

Visits Canadian Waterfowl Areas.--While on annual leave beginning July 1, F. C. Lincoln spent most of the month in Canada, where he obtained considerable information on the status of waterfowl. After a week in northeastern Wisconsin, he crossed over into southern Canada and went to Ottawa for conferences on the Bureau's work with P. A. Taverner, of the National Museum of Canada, and Hoyer Lloyd, superintendent of wildlife protection of the Department of Mines and Resources. Farther east, he was joined by Dr. D. A. Dery, past president of the Provencher Society of Natural History, and Dr. Gustone Ratti, president of the society, on a trip to the sanctuary that the organization maintains on Basque Island in the St. Lawrence River. The island is an important concentration point for Atlantic brant during their northern migration. At Perce in the Gaspé Peninsula, Willie Duval, the warden in charge, and Mr. Lincoln visited Bonaventure Island, one of the most interesting ornithological attractions in North America. On his return trip, he passed through New Brunswick.

Reports From Flyway Biologists.--Luther J. Goldman, Pacific Flyway biologist, recently completed a trip by airplane from Juneau to Fairbanks, Alaska, to observe waterfowl nesting habitat and topography. From Fairbanks he went to Tanana to continue his investigations of nesting ducks.

C. E. Gillham, Mississippi Flyway biologist, in a letter written at Cambridge Bay, Queen Victoria Island, N.W.T., reports that since June, he went by airplane from Chipewyan to Aklavik, and thence to Richards Island, where he observed and took motion pictures of thousands of snow geese, a large number of Canada geese, and many white-fronted geese, and swans also abundant, and large numbers of scaups and a few mallards. Of the ducks, pintails and old squaws were most numerous. Mr. Gillham describes his trip to Aklavik and vicinity as his most productive waterfowl investigation thus far. In the Lower Mackenzie Delta area, he noted substantial increases in the numbers of ducks and geese and also a few eider ducks. Leaving Aklavik, he boarded an airplane for the Great Bear Lake and Coppermine and made an airplane trip to a new post on Perry River, where he had hoped to locate a nest of the Ross's goose, but ice made a landing impracticable. He doubts that he will be able to visit this point this year, and at the time he wrote he expected to remain on Victoria Island two weeks and then resume his traveling after the ice goes out to sea.

Dr. George B. Saunders, Central Flyway biologist, reports that water areas in the Prairie Provinces of Canada show no great increase in breeding waterfowl, despite more abundant water this year. In south-central Alberta, however, he observed about 15 percent more nesting gadwalls. He is continuing his investigations in the vicinity of Edmonton.

Harold S. Peters, Atlantic Flyway biologist, states that the month he spent with Dr. Harrison F. Lewis along the north shore of the Gulf of St. Lawrence has given him a good picture of the waterfowl situation in that area. He saw many ducks during a 2-day visit to Anticosti Island. On arriving at St. John's, Newfoundland, on July 23, he completed plans for a boat trip along the south coast of Newfoundland, after which he plans to investigate some important waterfowl records in Nova Scotia and New Brunswick, and spend the last half of August in making a preliminary waterfowl survey of parts of Quebec and Ontario.

Bird-Banding Activity Increases.--Of the Bureau's 2,193 bird-banding cooperators, 110 are engaged in banding waterfowl, 30 of them on Federal refuges. During the past fiscal year, many cooperators banded more than 5,000 birds. The list is headed by E. A. McIlhenny, of Avery Island, La., with a total of 27,076, mostly migratory waterfowl, followed by two Survey men, Philip A. DuMont, of the Sand Lake Migratory Waterfowl Refuge, S. Dak., who banded 16,551 birds, and Johnson Neff, Sacramento, Calif., with 7,436 birds, mostly tri-colored redwings.

The total number of new birds banded and reported during the year is 346,056, an increase of more than 45,000 over the previous year. The birds represent 431 species, including 16 that had never before been marked with Survey bands. A total of 22,950 records of banded birds recovered at the station of banding or elsewhere was reported for the year--an increase of 5,000 over the previous year.

Records of Bird Distribution Added.--During the past fiscal year, data on the distribution and migration of birds to the number of 51,000 cards have been added to the files. The present number of migration observers is 403. During the year, distribution maps of four families, the cuckoos, kingfishers, woodpeckers, and parrots, were remade.

Continue Gull Survey.--The herring gull survey conducted last summer in cooperation with the Linnaean Society of New York and Dr. A. O. Gross, of Bowdoin College, Maine, is being continued this year at nine points along the Atlantic coast and on Lake Champlain. In addition to the Survey's aluminum bands, colored celluloid bands in various combinations are attached to the birds for "sight returns." During 1937, approximately 180 "sight returns" of gulls similarly marked during the year were reported from the vicinity of New York harbor. A similar study is being made with glaucous-winged and western gulls on the Pacific coast in cooperation with the Western Bird Banding Association.

W. P. A. Workers Assigned.--The W. P. A. has assigned Stanley J. Grbovaz, John F. Kennedy, Charles Perry, Earle Robertson, James S. Perrow, and Mrs. Rose Schley to this section. More than 32,000 return cards for banded birds have been sorted for punching, and work on the bird distribution maps is progressing rapidly, about 18 having been completed the past month.

Interesting Returns from Banded Birds.--The following are returns of outstanding interest from banded birds, showing band number, place and date of banding, and place and date of recovery:

Herring gull:

703556, Wis., Hat Is., Green Bay,
6/30/28

Wis., Hat Is., Green Bay,
7/14/38

Common tern:

A331993, Mass., Penikese Is.,
7/4/29.

Mass., Penikese Is., 6/9/38

A332036 " " " "

" " " "

A333113 " " " 7/7/30

" " " "

A333317 " " " "

" " " "

A334608 " " " "

" " " "

711560 " " " Aug. 1928

" " " 6/10/38

The above birds were captured
and released at their nests.

Mallard:

101952, Mo., Cuivre Is., 1/15/33

Sask., Montreal Post, Hudson's
Bay Co. 10/1/37

595137, Mont., Moiese, 11/8/27

Sask., Goodwater, 4/8/38

Wood duck:

0635978, N. J., Salem, 4/25/37

N. J., Salem, 5/1/38 (captured
in same nest cavity where
banded)

Greater scaup:

A5362--S. C., Monck Corners,
12/25/31

Man., Erickson, 10/11/37

Blue goose:

37-720554, Man., Morris, 8/30/57

Ont., 100 mi. N. Weenusk
Post, via Moosonee, Ont.,
4/1/38

Semipalmated sandpiper:

34-121374, Ont., Toronto, 10/19/37

Barbados, Belleville, 1/1/38

Greater yellowlegs:

A452873, Mass., North Eastham,
10/7/35

Que., Saguenay County, 5/11/38

Marsh hawk:

36-670515, N. Dak., McHenry Co.,
7/5/37

Mexico, Tangancicuaro, Mich.,
3/9/38

Red-tailed hawk:

309002, Sask., Muscow, 6/29/24

La., Ethel, 1/17/38

309020, " " 7/5/27

Ark., Greenwood, 1/3/38

320501, Kansas, Hamilton, 11/9/24

Kansas, El Dorado, April, 1937

Nighthawk:

B247021, Conn., Hamden, 6/13/33

Conn., Hamden, 6/21/38 (This
bird was also taken in 1937,
and nests on same roof each
year)

THE SURVEY

July-August 1938

Chimney swift:

199067, Ga., Thomasville, 4/12/27

Que., Choisy, 7/10/38

Crow:

211123, Man., Otto, 4/16/24

S. Dak., Sherman, 1/13/38

Junco:

35-65081, Ill., Zion, 3/16/36

Ont., Mud Lake, Patricia Dist.,
5/28/38

37-84478, Tenn., Nashville, 11/29/37

Mich., Blaney Park, 4/14/38
(Trapped and released at
banding station).

White-throated sparrow:

34-158883, Pa., Norristown, 5/2/35

N. S., St. Paul Is., 5/8/38

Black-headed grosbeak:

A284151, Calif., Yosemite Valley, 5/5/33

Calif., Yosemite Valley,
6/28/38

(The first of the species banded in Yosemite
Valley).

Barn swallow:

C3371, Sask., Muscow, 7/7/29

Bolivia, El Carmen, Rio
Madre de Dios, 6/1/35
(Not reported until July
1938).

Fur Resources

Grade Karakul Sheep Skins.--On July 13 and 14, Frank G. Ashbrook and Chas. E. Kellogg assisted at New York City in grading and appraising 55 Persian lamb skins taken from the experimental flock at the National Agricultural Research Center at Beltsville, Md. The Survey is cooperating with the Bureau of Animal Industry in the karakul experiments. Before returning to Washington, Mr. Ashbrook and Mr. Kellogg conferred with Dr. Robert K. Enders at his summer laboratory, at Swarthmore, Pa., and visited a biological laboratory where 23,000 adult rabbits are kept for the manufacture of serums used in the treatment of human pneumonia. This laboratory buys about 2,500 rabbits monthly to keep enough animals on hand for making its products.

Muskrat Pens Completed.--A battery of new muskrat pens containing equipment for providing running water has been completed at the Fur Animal Field Station at the Blackwater Migratory Bird Refuge, Md., reports Dr. Herbert Dozier. Several sections of the marsh have been penned off for breeding purposes and have been so constructed as to simulate actual marsh habitat.

Muskrat Heavily Infested with Mites.--A muskrat found on the Blackwater Refuge in a weakened condition was estimated by Dr. Dozier to harbor about 15,000 mites, heavy infestations of which seriously affect the muskrat production.

Assists at Field Station.--Howard J. Kumin, formerly with the U. S. Bureau of Fisheries, reported for duty on July 1 as a junior biologist at the Fur Animal Station. He holds a B. S. degree from Antioch College, Ohio, and has completed a year's work in zoology at Harvard University.

Arrange for Fur Fiber Study.--Cooperative arrangements have been completed with the Bureau of Animal Industry for a critical study of fur fibers. An employee will be appointed soon to conduct the investigation.

Addresses Fur Breeders.--Considerable interest in the Bureau's investigations of the reproductive cycle of the mink was shown at the meeting of the New York Fur Breeders Association, June 23 and 24. Dr. Robert K. Enders, accompanied to the meeting by Charles F. Bassett, director of the Fur Animal Experiment Station, N. Y., explained the progress of the investigations since they were begun in February.

Improvements Made at Fur Experiment Station.--Charles F. Bassett, director of the Fur Animal Experiment Station, reports the completion of two new mink pens under a W. P. A. project. Each pen will accommodate 200 minks. Grounds around the new office building have been graded and seeded to grass, and a new chain link fence around the station is expected to be completed soon. A W.P.A. allotment also has been made available for remodeling the residence and improving some of the other buildings.

Treat Animals for Distemper.--All 311 fur animals at the Fur Animal Experiment Station were treated on July 9 for distemper, which has been prevalent in mild form since the first of the year. Dr. C. L. Larson, a collaborator of the Bureau at the University of Minnesota was assisted by Mr. Ashbrook and Mr. Kellogg in treating the animals.

Named Assistant to Fur Station Director.--James R. Leekley, who was graduated last June from the Oregon State Agricultural College, began work on July 25 under temporary appointment as an assistant to the director of the Fur Animal Experiment Station. While a student he had charge of the experimental fur animals at the college, which is the only institution in this country offering a 4-year course in fur farming.

Lauds Work of Rabbit Station.--A domestic rabbit magazine of national circulation recently carried an article that explained and praised the research work of the Rabbit Experiment Station, at Fontana, Calif. Experiments covering a 3-year period and recently completed are expected to furnish additional valuable information for rabbit breeders. The magazine also carried two articles by George S. Templeton, director of the station, one of them calling attention to the new Bureau leaflet on "Care of Rabbits During Warm Weather."

Research on Mucoid Enteritis Advances.--Mr. Templeton reports that mucoid enteritis in rabbits has been produced experimentally at the Rabbit Experiment Station, and that investigations thus far indicate the disease is caused by a vitamin deficiency. Efforts are being made at the Station to develop methods for controlling the disease, as it not only causes heavy losses among commercial rabbit breeders but sometimes seriously interferes with the research work.

Disease Control

Given Editorial Assignment.--Dr. J. E. Shillinger has been named a member of the editorial staff of the Journal of the American Veterinary Medical Association, and from July 5 to 9 attended the national meeting of the association at New York City for conferences on the Journal's articles on wildlife and fur-animal diseases.

Addresses Ontario Fur Farmers.--Dr. Shillinger spoke on infectious diseases of fur animals raised in captivity and explained the Bureau's research along this line on June 15 and 16, at a meeting of Ontario fur farmers held at the Veterinary College, at Guelph, Ont. He also visited a game farm where large numbers of pheasants are produced under controlled conditions, and conferred with Dr. Seymour Hadwen, of the Ontario Research Foundation, who was employed by the Bureau several years ago on Alaska reindeer research.

Attends Wisconsin Meeting.--On June 17 and 18, Dr. Shillinger attended a meeting of the Wisconsin Fur Breeders' Association and spoke on disease control on fur farms. He also conferred with officials of the University of Wisconsin on their plans for research on fur-animal disease and visited several large fur farms in the States where disease control projects are to be undertaken.

Investigates Hungarian Partridge Disease.--Dr. Shillinger recently investigated an outbreak of disease among young Hungarian partridges on the Fisher State Game Farm, at Schwenkville, Pa. He observed that quail, pheasants, and chukar partridges being raised in close proximity to the partridges were not affected. The disease appears to attack young chicks about the time of hatching, causing a heavy mortality during the first 3 weeks.

Parasites in Grackles.--A number of purple grackles in the vicinity of Washington, D. C., have been found affected with various blood parasites. Several species of protozoa as well as microfilaria, have been noted in a large number of grackles trapped for examination. Efforts are being made to determine how these parasites are transmitted to the birds and their pathogenic significance.

Aids State in Disease Control.--During July, Dr. Don R. Coburn, of the research laboratory at the Bear River Migratory Bird Refuge, Utah, accompanied by other Bureau members and State officials, studied the duck sickness situation in New Mexico. After examining the LaJoya Game Bird

Refuge and Cheap John Lake, where 26,000 birds died last year from botulism, Dr. Coburn made recommendations to local authorities for reducing the losses. The State officials and members of the State Game Protective Association are cooperating with Bureau members in this work. Waterfowl botulism in the Western States was not so severe this summer as some previous seasons, according to Dr. Coburn.

FEDERAL AID IN WILDLIFE RESTORATION

Confer with Game Commissioners.--On August 10, Mr. Day spoke on "Wildlife: Its Relation to Agriculture" at a State meeting of the West Virginia Farm Bureau Federation held at Jackson's Mill, after which he spent several days with personnel of the State game department in examining areas proposed for development under the Federal aid program. Robert M. Rutherford recently visited the offices of the Pennsylvania and New York game commissioners to obtain information about their procedure in land acquisition, and to discuss matters pertaining to land acquisition and development projects. J. Paul Miller has visited New York, Kentucky, and Oklahoma to assist State game officials in drawing up plans for wildlife programs.

Act on State Proposals.--A large number of proposed wildlife restoration projects have been received from the States and several involving research and development have been approved. Favorable action on the remaining projects is expected shortly. Inquiries from the States and information received from Bureau personnel in the field indicate that the number of State proposals will increase substantially.

Named Technical Adviser.--Complying with a request from Commissioner Lithgow Osborne, of the New York Conservation Department, J. Paul Miller has been named technical adviser and member of the committee that will review the Conservation Department's work. He was at Albany, N. Y., and in the field from July 25 to 29 studying the State's wildlife program, and returned to Albany on August 10 to complete the study.

Explains Federal Aid Program.--On August 10, T. B. Murray explained provisions of the Pittman-Robertson Act at a meeting of the California Fish and Game Commission at Susanville. He also assisted the Commission in making tentative plans for participating in the program.

LAND ACQUISITION

Examine Land to be Included in Bombay Refuge.--During the week of July 17, Mr. Dieffenbach and Elmon Radway examined and negotiated for the tracts of land in the Bombay Hook Migratory Waterfowl Refuge, Del., that are needed to round out the refuge area and facilitate administration. As the ownership of some areas is involved, their acquisition may require more negotiation than usual. A proposed refuge site in New Jersey was also inspected, after which a general survey of the marsh and coastal area was made from the Brigantine Inlet, N. J., south to the Chincoteague Island, Va.

Four Refuges Added.--Recent Executive orders of President Roosevelt provide for the establishment of four new refuges. The new Wheeler Migratory Waterfowl Refuge covers approximately 41,800 acres of land and water in Limestone, Madison, and Morgan Counties, Ala., and includes part of the lake created by the construction of the Wheeler Dam by the Tennessee Valley Authority. Other refuges established are the Ruby Lake Migratory Waterfowl Refuge, on approximately 37,540 acres of land in Elko and White Pine Counties, Nev.; the Fort Tyler Migratory Bird Refuge, off the north shore of Long Island, N. Y.; and the West Sister Island Migratory Bird Refuge, at the western end of Lake Erie. The Fort Tyler Refuge contains 14 acres on Gardiner Island, and the West Sister Island Refuge, 82 acres. An Executive order adding 5.2 acres to the Salt Plains Wildlife Refuge, Alfalfa County, Okla., has also been issued.

Survey Land on Moosehorn Refuge.--On August 6, A. A. Riemer, assisted by F. R. Kessler and George L. Ducrot, surveyed a small parcel of land on the Moosehorn Migratory Bird Refuge area in Maine that is to be acquired for a road to be built to the headquarters site. Surveys of several other lands being acquired were checked. On returning to Washington, Mr. Riemer checked surveys made at the U. S. Fur Animal Experiment Station and the Montezuma Migratory Bird Refuge, N. Y.

Dies from Automobile Accident Injuries.--L. F. Griffin, engineering draftsman with this division since August 1934, died in a hospital at Denver, Colo., on June 28, from injuries sustained in an automobile accident, which occurred while he was enroute to Denver on annual leave.

WILDLIFE REFUGES

Wildlife Increases on Tamarac Refuge.--Approximately 1,400 pairs of ducks, representing 12 species, that nested on the Tamarac Migratory Waterfowl Refuge, Minn., this year, produced about 5,000 young, reports Refuge Manager Gilbert Gigstead. Most numerous of the nesting birds was the blue-winged teal, followed by the mallard, goldeneye, redhead, lesser scaup, ring-necked duck, ruddy duck, and canvasback. Mr. Gigstead also reports that deer on the refuge are increasing rapidly, and that in the past three months many with young have been seen.

Beaver Doing Well on Tamarac Refuge.--Beavers recently planted on the Tamarac Refuge have built three dams and flooded several meadows and lowlands between Two Island Lake and Little Flat Lake, reports Mr. Gigstead. Muskrats are common on the refuge and have begun to build houses.

Swallows Try to Use New Buildings for Nesting.--Archie V. Hull, refuge manager of the Red Rock Lakes Migratory Waterfowl Refuge, Mont., reports that more than 2,000 cliff swallows attempted to build nests under the eaves of the new administration building last spring. With the razing of a number of the old buildings, many swallows concentrated around the new

buildings, which were built of logs with heavy overhanging eaves.

Geese Feed on Refuge.--Research workers on the Bear River Migratory Bird Refuge, Utah, report that during May a marked change occurred in the feeding habits of geese. When the pondweeds growing in the refuge units attained sufficient growth to be reached without diving, most of the geese that had been feeding on the vegetation on silt lands for several months moved onto the refuge. A few pairs with broods that had nested farther up the Bear River continued to feed on vegetation on the river banks. The shifting of feeding grounds indicates that the refuge units offer better sites for rearing the young.

Nesting Increases Reported on Waubay Refuge.--Large numbers of mallards nested on the Waubay Migratory Waterfowl Refuge, S. Dak., and probably outnumbered nesting pintails, according to Refuge Manager Watson E. Beed. Nesting numbers of redheads, canvasbacks, ruddy ducks, and lesser scaups showed decided gains over last year. Blue-winged teal and gadwall increases were also noted. Nesting ducks on the refuge in the order of abundance this season were pintails and mallards, blue-winged teals, gadwalls, shovelers, baldpates, redheads, ruddy ducks, canvasbacks, and goldeneyes. Last year the refuge produced three broods of goldeneyes--a new record for that part of the country--but this season five broods were already hatched out early in summer and two clutches of eggs were still unhatched. All birds of this species used the nesting boxes built by C. C. C. enrollees.

Reports Increase.--Steven B. Crossley, refuge manager of the Big Lake Migratory Bird Refuge, Ark., reports that wood ducks and hooded mergansers nested in considerable numbers on the refuge this season. During the spring migration, canvasbacks, baldpates, and coots stopped on the refuge in larger numbers than they have in the past five years.

Successful Nesting Season.--More waterfowl and other game birds nested on the Sacramento Migratory Waterfowl Refuge, Calif., this season than last. Better cover conditions resulted from curtailment of grazing, according to Refuge Manager Peter J. Van Huizen, who estimates that more than 2,000 Chinese pheasants and 220 mallards were produced this season. Other nesting birds under observation were cinnamon teals, pintails, Florida gallinules, American avocets, marsh hawks, black-necked stilts, American bitterns, killdeer, and mourning doves.

Reports Increase in Antelope.--Benjamin M. Hazeltine, refuge manager of the Lake Bowdoin Migratory Waterfowl Refuge, Mont., reports that the 13 antelope on the refuge have produced five fawns. The first fawn was observed on June 3.

Waterfowl Increases on Valentine Refuge.--Dr. Ward M. Sharp, assistant refuge manager of the Valentine Migratory Waterfowl Refuge, Nebr., reports that ducks nested on the refuge this year in far greater numbers than ever before. He estimates the increase well over 300 percent. Green-winged teals and baldpates nested on the refuge for the first time since its establishment.

Young Blue-Winged Teals on Pea Island.--S. A. Walker reports that he observed four young blue-winged teals on the Pea Island Migratory Waterfowl Refuge, N. C., this summer, the first he has seen since his appointment as refuge manager.

New Nesting Birds.--Four species of birds new to the Pablo Migratory Waterfowl Refuge, Mont., nested there this summer and one on the Ninepipe Refuge, reports Refuge Manager George L. Girard. The four on the Pablo Refuge are the western grebe, horned grebe, American goldeneye, and western mourning dove; and the one new to the nearby Ninepipe Refuge is the American bittern. The western willet was seen this summer on the Pishkun Refuge, Mont., for the first time, but none was nesting.

More Shovelers Nest on Pablo Refuge.--Few shovelers nested on the Pablo Refuge last year, but this season they nested in greater numbers than any other duck, reports Mr. Girard. Mallards, pintails, baldpates, and blue-winged teals were also common nesters this year.

Minks Become Problem on Lower Souris.--C. J. Henry, assistant refuge manager of the Lower Souris Migratory Waterfowl Refuge, N. Dak., reports that minks have this year for the first time caused serious damage to the birds. Not only have they killed appreciable numbers of ducks, but they also wiped out the entire colony of nesting Franklin's gulls and destroyed between 200 and 300 nests.

Detailed to Wichita Refuge.--Robert J. Hawley, Harry T. Maltby, and Melvin E. Ramsey, deputy game management agents, have been assigned to summer patrol work at the Wichita Mountains Wildlife Refuge, Okla. Mr. Hawley will be in charge of the activities at the Quannah Parker campground while the other two officers will be engaged in day and night patrol of all sections of the refuge.

Motorists Warned.--Officials of the Wichita Refuge are warning motorists using refuge highways to observe speed laws in order to lessen the death toll of wildlife on the roads. During July, three deer, one of which had a suckling fawn, were found dead on the highways. A dead opossum with 11 live young still clinging to her side was also found. Another young opossum found on the side of the road apparently had been torn from its mother when she was hit by an automobile.

Prairie Dogs Increase.--The colony of prairie dogs at Wichita Refuge, which is much larger this year, attracts the attention of many visitors. Raccoons raid garbage cans at headquarter residence nightly, and have become adept in prying off tightly fitted lids. During June, large numbers of tarantulas were observed crossing roads at night. Many, however, were stung and paralyzed by "tarantula hawks" and then dragged away. Collared lizards, or "mountain boomers", also appear unusually abundant this year.

Hérons Attract Visitors.--Nine snow white herons that feed on small frogs and insects along the shore line of Quanah Parker Lake have attracted the attention of many visitors to the Wichita Refuge. The birds apparently are the young of the little blue herons. Appearance of the American egret at both Quannah Parker and Crater Lakes has been reported. This bird is rarely observed in this vicinity.

Protect Quail Nest.--A bobwhite quail whose nest was within 15 feet of the spot on the Wichita Refuge where C.C.C. enrollees were working with a drag line and trucks hatched a brood of 12 chicks during July. The nesting site was marked with flags while the mother bird was incubating the eggs.

Big-Game Fares Well At Wichita Refuge.--With a good stand of forage grasses on the Wichita Refuge, the buffalo and elk appear to be in good condition. Elk, deer, Texas longhorns, and horses on the refuge, however, have been pestered by swarms of deer flies, and buffalo by small black flies. Brewer's blackbirds and cowbirds follow the buffalo and perch on their backs to pick off the flies. Sometimes as many as a dozen birds may be seen on an animal. They also perch on the backs of the saddle horses. The elk try to escape the pests by lying down in the refuge ponds and lakes.

Six fawns were born in the small band of antelope this year, but only three are believed to have survived. A young elk that had been abandoned was brought to headquarters, but died two days later. A one-eyed elk cow known to be 14 or 15 years gave birth to a calf this year. Both are in good condition.

Longhorns Weighed.--A 10-year-old longhorn steer recently put on the new platform scales at the Wichita Refuge weighed 2,045 pounds, and another 10-year old steer with a horn spread of 7 feet weighed only 10 pounds less. Two other steers weighed 1,905 and 1,870 pounds. Of the original herd brought to the refuge in 1927, only three cows remain.

Big-Game Fence no Barrier to Coyote.--William Earl Drummond, ranger at the Wichita Refuge, reports seeing a coyote on July 11 jump to the top of a 6-foot big-game fence on the refuge, then pull its body over and alight on the other side. The animal easily reached the top in one leap, placing its forepaws on the top of the fence and its hind feet on wires a short distance below.

Bitten By Snake.--Glad D. Hindman, junior engineering aide of the C.C.C. camp at the Wichita Mountains Wildlife Refuge, was bitten on the hand by a Copperhead snake on July 11, while moving a small log. First-aid treatment was given at the refuge, after which Hindman was removed to a hospital. He returned to duty about a week later. During June, a boy scout was bitten twice on his foot while crossing a patch of grass at night on his way to a pump. Antivenin was administered at the troop camp, after which the youth was removed to his home at Wichita Falls, Tex. His foot became swollen, but no serious effects were anticipated. A buffalo heifer apparently bitten while grazing was observed with a badly swollen face.

Many rattlesnakes have been killed on the refuge, but only a few copperheads. A 56-inch diamond-back rattlesnake that was captured had swallowed a full-grown cottontail rabbit and a quail. Two young skunks were found in a bull snake. Deputy Game Management Agent Melvin E. Ramsey saw a coachwhip snake cross a road with a cottontail rabbit in its mouth. It stopped in a roadside ditch and reared up one-third of its length in an effort to cross the ditch bank. Upon noticing Mr. Ramsey it disappeared after disgorging the rabbit, which was taken to the research laboratory.

Large Holiday Crowd.--More than 25,000 persons spent the Fourth of July holiday period at the Wichita Refuge. Since then large numbers of campers, tourists, and members of various organizations have made good use of the refuge's recreational facilities.

Dam Completed.--Construction of the Cooperton Dam on the northwest part of the Wichita Refuge has been completed with only the pipe connections remaining to be made. The project was begun two years ago to furnish water for the nearby village of Cooperton.

Elk Help Peel Logs at Refuge.--Although the elk on the winter feeding grounds on the Elk Refuge, Wyo., had plenty of hay available at all times, they browsed heavily on some of the aspen growth and shrubbery on the nearby foothills, reports Almer P. Nelson, in charge of the refuge. He adds that the elk helped peel the bark from pine logs that had been hauled from a nearby forest for use in building new headquarters. W.P.A. workers were assigned to peel the logs, but each evening after the elk had finished feeding on hay they would trek to the log pile and begin gnawing the bark. They also ate much of the bark that had been peeled by the workers.

Pinto Colt Born at Refuge.--The first pinto colt born on the Charles Sheldon Antelope Refuge, Nev., arrived on June 19. Its mother is one of several pinto bought last year for use in patrol work. Pasture and hay lands on the refuge are in a better condition than for several years.

Transfer Antelope.--Of the young antelope picked up in May on the open range and raised on a bottle at the Charles Sheldon Antelope Refuge, Nev., 20 were transferred during June to the Desert Game Range, Nev. Sportsmen of Clark County and members of the Forest Service cooperated with Survey members in transferring the animals. The Washington Game Commission also cooperated in the transfer of 24 fawns to Kittitas County, Yakima Valley, Wash., in an attempt to establish a band of antelope there.

100 Percent Calf Crop.--Four young Texas longhorn cows at the Fort Niobrara Game Preserve, Nebr., repeating last year's performance each gave birth to a calf this year.

Seven Young Buffalo at Sullys Hill.--Seven calves have been reported in the small buffalo herd at Sullys Hill Game Preserve, N. Dak. Grazing conditions are good this season, and more rainfall was recorded for July than in the same month in past years. A total of 5,352 persons visited the preserve in July.

CONSTRUCTION AND C. C. C. OPERATIONS

Leaves on Inspection Trip.--Mr. Terhune left on August 5, on a western inspection trip that will continue until about September 19. He will confer with Survey, C. C. C., and War Department officials and make inspections in Illinois and in 14 States in the Plains region, the Great Basin, the Rocky Mountains, and the West Coast.

To Establish Four New Camps.--Plans are being made for the establishment on October 1, of four new C. C. C. camps on newly acquired refuge areas now lacking improvements for wildlife management and effective administration. The camps will be on the Bitter Lakes Migratory Waterfowl Refuge, N. Mex.; the Sabine Migratory Waterfowl Refuge, La.; the Aransas Migratory Waterfowl Refuge, Tex.; and the Boulder Canyon Wildlife Refuge, Ariz.

Sets Record in Employing Former Enrollees.--During the past fiscal year, the Bureau led other Federal agencies using C. C. C. help in the number of former enrollees employed as facilitating personnel at C. C. C. camps. A total of 75, or more than 1 out of 5 such employees at the Survey's camps, were former enrollees, including 5 dragline operators, 5 machine operators, 11 mechanics, 18 clerks, 19 squad foremen, and 5 junior foremen. Of the 75 former enrollees 80 percent had received special training through C. C. C. educational activities.

Visit Camp at Bombay Hook Refuge.--Fred Morrell, Chief of the Office of the C. C. C. Activities, accompanied by P. S. Munk Pederson and M. I. Frost, inspected on August 14 the C. C. C. camp at the Bombay Hook Migratory Waterfowl Refuge, Del.

Inspect Cooperative Project.--On August 2 and 3, Fred Murray, of the Department's Office of C. C. C. Activities, accompanied P. S. Munk Pederson and R. O. Gustafson to New Jersey for a conference with officials of the New Jersey Department of Conservation and Development on the proposed cooperative development of the Tuckahoe State Game Refuge with C. C. C. labor under the direction of the Bureau. Unoccupied buildings at Camp MC-63 were found suitable for occupancy of a C. C. C. company, which has been requested by the Bureau for this cooperative work. Mr. Gustafson inspected C. C. C. operations at the Savannah River Wildlife Refuge, Ga., and S. C., and the Lake Mattamuskeet Wildlife Refuge, N. C., particularly equipment operation and the safety and educational programs. On August 16, he made a similar inspection of the camp at the Montezuma Migratory Waterfowl Refuge, N. Y.

Inspects Camps.--During an inspection trip from July 16 to 24, P. S. Munk Pederson visited C. C. C. camps on the Seney Migratory Waterfowl Refuge, Mich.; the Mud Lake and Tamarac Migratory Waterfowl Refuges, Minn.; the Arrowwood, Upper Souris, Lower Souris, and Des Lacs Migratory Waterfowl Refuges, N. Dak.; the Medicine Lake Migratory Waterfowl Refuge, Mont.; and the Sand Lake Migratory Waterfowl Refuge, S. Dak. He also conferred with regional directors, C. C. C. inspectors, and Survey engineers, and in Iowa inspected the buildings that have been constructed on the Okoboji State Refuge by C. C. C. labor under Bureau direction.

To Direct Building Program.--Arrangements have been made for the transfer of Michael J. Sassani, of the Washington office, to the Patuxent Research Refuge, Md., where he will be in charge of completing working drawings for building construction to be undertaken shortly with funds allocated by the Works Progress Administration and the Public Works Administration. Mr. Sassani will establish an office at the refuge.

Inspects Bait Supply Warehouse.--E. P. McDermott left on August 12 to inspect the Bureau's rodent-bait supply depot at Pocatello, Idaho, which is being enlarged with the help of W. P. A. labor.

Personnel Changes.--Capt. M. N. Egoroff, senior engineer resigned from active service on July 24, and shortly thereafter accepted a position with the Federal Housing Authority.

Mrs. Beverly G. Hallock resigned as a junior clerk-stenographer and left on July 18 for Seattle, Wash.

Mrs. Gladys Kroeger, a junior clerk-stenographer in the Division of Wildlife Research was transferred to this division on July 1.

Miss Frances N. Sullivan was appointed a junior clerk-stenographer and reported for duty on August 2.

Miss Ann ter Horst was transferred on July 1 to the Division of Administration.

Miss Alice J. Williams has transferred to this division after being on temporary detail as a junior clerk-stenographer from the Division of Administration since April 16.

GAME MANAGEMENT

Game Management Agents

On Western Field Trip.--Chester A. Leichhardt, assistant chief of the Division of Game Management, returned August 6, from a western field trip, during which he conferred on law-enforcement matters with members of the Pacific, West Central, Plains, and East Central regional offices, 12 game management agents, and 5 State game departments. Most of the State game departments and sportsmen with whom he talked appeared well-pleased with the 1938 waterfowl hunting regulations. Mr. Leichhardt also inspected eight waterfowl refuges, and reports that waterfowl nesting conditions in the West show great improvement over last season.

Moves Office.--Game Management Agent Edward T. Carter has moved his headquarters from the regional office at Milwaukee, Wis., to room 205, Federal Building, Oshkosh, Wis., in order to be nearer the field he covers in his law-enforcement work.

Law Enforcement

Liberate Wild Birds from Cages.--The following live migratory birds held in cages were recently seized in Illinois by Federal agents and a Federal deputy game warden and released or donated to public zoos: 7 indigo buntings, 3 American goldfinches, 2 brown thrashers, 3 catbirds, 2 bobolinks, 2 wood thrushes, 2 fox sparrows, 2 white-throated sparrows, and 1 each of the following: Nonpareil bunting, mockingbird, Baltimore oriole, olive-

backed thrush, rose-breasted grosbeak, red crossbill, slate-colored junco, white-crowned sparrow, field sparrow, Lincoln's sparrow, and yellow-breasted chat. To discourage the practice of holding live migratory birds in cages in Texas, Federal and State officers seized the following birds from 129 persons: 150 mockingbirds, 30 cardinals, 21 house finches, 17 doves, 7 painted buntings, 5 Arkansas goldfinches, 4 American goldfinches, 4 orioles, 3 pine siskins, and 1 blue grosbeak.

Texas Hunting Club Secretary Fined.--Pleading guilty in a State court to a charge of illegally taking wild ducks, the secretary of a hunting club near Athens, Tex., on July 25, was fined \$467 and costs of \$33. Investigation of the case by Federal and State officers also disclosed that considerable baiting had been done on the club's property.

Possessed Cooked Elk Meat.--A resident of Pacific County, Wash., found by a deputy game management agent and a State patrol officer on June 25, in possession of 14 quarts of cooked elk meat, was arraigned in a State court and fined \$250 and costs and sentenced to 15 days in jail. In defaulting payment of the fine, the defendant was sentenced to 100 days in jail.

Killed Redheads.--A hunter who had killed and possessed 35 redheads in St. Clair County, Mich., on October 24, 1937, was sentenced by the Federal court at Detroit on June 28 to 4 months in jail and fined \$100.

Beaver Pelt Shipper Fined.--An invoice obtained by an agent in New York on a shipment of five beaver skins from California during 1937 that was investigated further by agents in California and South Dakota, and the South Dakota Department of Game and Fish resulted in prosecution of the original shipper. The defendant was arraigned in a municipal court in South Dakota on July 26, fined \$200 and costs of \$11.15, and given a suspended 60-day jail sentence.

Illegal Trapper Jailed.--A resident of Wisconsin pleaded guilty in a State court on August 8, to illegally trapping fur animals and retaining the skins of muskrats and raccoons, and in default of payment of a \$50 fine and costs was committed to jail for 60 days. Information obtained by Federal agents at Chicago and submitted to a State conservation officer led to the trapper's arrest.

Five Arrested in Dove Slaughter.--Five men found in Pinal County, Ariz., on August 1, in possession of an aggregate of 250 mourning and white-winged doves that they had killed during the day, were arrested by a game-management agent and a deputy State game warden. They were released from jail for appearance in Federal court.

Hunted Coats from Motorboat.--A hunter was fined \$25 in Federal court at Ocala, Fla., on July 18, for hunting coats from a motorboat.

Importations

Rare Hybrid Animal Imported.--A tiger-lion, the offspring of a Siberian tiger and an African lioness arrived from Hamburg, Germany, at New York City, in August, and was donated to the Central Park Zoo. The animal resembles a lion except its head. In winter the tiger stripes are said to appear.

Interesting Importations.--Among interesting birds recently imported were a six-plumed bird of paradise, two 12-wired birds of paradise, and one pied hornbill.

Inspector Resigns.--James L. Peters, who was appointed inspector of foreign birds and mammals at Boston, Mass., in May 1935, resigned on April 25.

Alaska Game Law Administration

Commission Chairman Resigns.--Irving McK. Reed, for many years chairman of the Alaska Game Commission, resigned June 6 to devote more time to his personal business. John Hadjukovich, appointed to fill the vacancy, assumed his duties on July 16.

Addresses C. C. C. Camps.--Agent Douglas Gray, of district 1, recently gave two talks on wildlife at the C. C. C. camps in the Juneau district, and made a trip to Sitka to confer with the commanding officer of the Japanski Island Naval Station so that the officer might acquaint his men with the Alaska game law and regulations. Agent Gray also accompanied the district court party on a 3-weeks trip throughout southeastern Alaska.

Trapper Appeals Case, but Loses.--An alien apprehended by Agent Hosea Sarber, of district 2, for trapping prior to the open season, was convicted recently on one count when tried before the United States Commissioner. He was fined \$300 and sentenced to serve 30 days in jail. Appealing the case, he was tried before a district court jury, found guilty on two counts, fined \$300, and sentenced to 30 days on each of the two counts. United States attorneys commended Agent Sarber for the manner in which he prepared and presented the evidence.

Evidence that two C. C. C. enrollees at Petersburg had taken grouse out of season with a gun borrowed from the camp cook and that the cook had served the grouse to enrollees was obtained by Deputy Warden Howard Jensen. Further investigation by Agent Sarber resulted in charges being filed against the two enrollees. Both pleaded guilty and were sentenced to serve 30 days in jail. The cook's gun was confiscated.

Apprehend Alien Trapper.--Agent Clarence Rhode, of district 4, assisted by Agent Jack O'Connor, of district 6, apprehended an alien trapper the past quarter during a patrol of the district east of the Copper River to the Canadian boundary and north to Tanana crossing. Arrest of the alien had been requested by Territorial officials. Upon conviction in court, the trapper was fined \$300 and sentenced to 6 months in jail. He also forfeited 10 firearms, 16 fox skins, a bear skin, and 500 pounds of caribou meat. Several other violators were also apprehended during the patrol trip.

Checks Fur Shipments.--During the past quarter, Agent Harold Gallwas, of district 5, checked fur shipments consigned to the States and made several patrol trips in the vicinity of Seward and the eastern Kenai area. A beaver trapper whom he arrested with 13 skins over the legal limit was convicted. During the remainder of the quarter, Agent Gallwas spent most of his time in the district in sealing beaver skins.

Trappers Fined.--Deputy Agent Norman J. Benson, of district 7, assisted by Agents Sam O. White and Jack O'Connor, apprehended two trappers in the Tonzona Basin country the past quarter for illegal trapping. An airplane was used to reach them. Both men, who were fined \$75 and \$80 in court at McGrath, were so impressed with the treatment from the officers that they promised to cooperate with them in conserving wildlife.

Upon condition that he personally assist in the investigation, Agent O'Connor was informed of a cache of 1,000 beaver skins at Sleetmate. Two days elapsed before plane transportation became available, and by the time Agents O'Connor and Benson arrived the cache had been moved. One skin, however, had been left, and the violator was arrested. He was fined \$25 for possession of the skin and \$25 for falsifying records. In addition, his fur dealer's license was canceled for a year and his resignation as a licensing officer for the Commission was requested.

Deputy Warden Benson and Agent White in flying the chartered plane into the Stony River country arrested two white men, operating trap lines more than 100 miles in length nearly 2 months after the close of the season. They had killed at least 10 moose, including a cow with an unborn calf. Much of the meat was cached along the trap line for dog feed. Stony River Indians reported they had been driven away at the points of guns. Both men were sentenced to serve a year in jail. A son of one of the men was ordered to remain with Mr. and Mrs. Benson until fall at which time he will be sent to Fairbanks to live with Mr. and Mrs. White and attend school. The youth, who was being trained in law-breaking had been ordered by his father to care for the camp until he and his friend were released from jail.

Destroyed Beaver Homes.--During April, Agent C. M. Carson, of district 8, made a patrol trip by airplane in the Tikchick Lake country and found many beaver dams and houses cut open and the animals gone. Two men,

who were arrested and taken to Dillingham, pleaded guilty to cutting the dams and houses and were fined \$300 each and given 30-day jail sentences.

Agent's Work Results in Court Penalties.--Agent Jack O'Connor, of district 9, spent considerable time during the past quarter assisting agents in districts 4, 5, and 8. He also sealed a large number of beaver skins in his district and successfully investigated several cases of law violations. One nonresident trapper arrested by him was sentenced to 30 days in jail. Another trapper was fined \$100 and five beaver skins that he had in excess of the legal limit were forfeited. Agnet Grenold Collins assisted Agent O'Connor in some of the investigations.

Teaches Conservation.--In addition to sealing beaver skins and doing routine patrol, Agent Peter McMullen, of district 10, has given several talks before school children on the value of wildlife conservation. As the result of his talks in which he pointed out beneficial birds, six boys voluntarily came to his office and turned in the sling shots they had been using to kill birds. Parents also appreciated the effects of his talks, one father informing him that his son cut 70 notches in his sling shot last year. Each notch represented a killed bird.

Works in Fairbanks District.--Agent Grenold Collins, of district 14, arrived at Fairbanks from Nome on March 20 to assist in the work of the Fairbanks district while Agent Sam O. White was assisting Agent Benson in the Kuskokwim district. Through the use of a chartered airplane, Agent White has been able to assist other agents in investigating cases in remote areas.

On April 4, Agent Collins made a trip by airplane to the Lake Minchumina country to investigate a reported poison case. An arrest was made after the investigation, but a jury returned a verdict of not guilty. On May 22, he left Fairbanks in a boat of the Alaska Game Commission to seal beaver skins in June along the Yukon River and throughout district 13.

Seize Skins.--During the past quarter, agents operating in district 15 seized 1 marten neckpiece, 1 mountain goat head, 2 grizzly bear skins, and 14 beaver skins. Work involving enforcement of the Alaska Game Law in Seattle and the Pacific Coast States is included in this district. Investigations are made by Capt. John O. Selleveld, master of the Commission's patrol vessel, Brown Bear, Game Management Agent Webster H. Ransom, and other agents.

Investigates Bear-Trap Case.--Cooperating with Department of Justice officials, Dave Wood, junior administrative assistant of the Alaska Game Commission, recently made a trip to Haines to investigate reports of a human skeleton found in a bear trap by Indians of the Klukwan area. According to the report the skeleton was that of a trapper who disappeared from Haines four years ago. The Indians apparently became

alarmed before the investigating party reached Haines and were reluctant to offer any information. During the past two years native Indians have voluntarily surrendered 24 traps to the Commission.

PREDATOR AND RODENT CONTROL

Investigating Predator Conditions in Alaska.--On July 14, Mr. Young left Washington, D. C., for Alaska to investigate predator conditions and to advise on methods for controlling wolves and coyotes that prey upon reindeer, caribou, and other forms of wildlife. He boarded the patrol boat Brown Bear on the Pacific coast and expects to return to Washington about the middle of September.

To Address Sugarcane Technologists.--F. E. Garlough, director of the Control Methods Research Laboratory, Denver, Colo., has been invited to speak on the subject "Rodents in Relation to Sugarcane Growing," before the International Association of Sugarcane Technologists at their convention to be held at Baton Rouge, La., October 25 to November 5.

Spencer Returns to Denver Laboratory.--Having completed the rat abatement project in Hawaii late in July, Henry J. Spencer returned to Denver, Colo., to continue his work in the Control Methods Research Laboratory. As a result of the Bureau's study and demonstrations it is felt that the rat-control problem in the sugarcane, pineapple, coffee, and nut growing sections of Hawaii can now be handled locally. Improved methods and satisfactory poison formulas for controlling the rodents were developed during the project begun two years ago.

Control Work Increases in Texas.--During the fiscal year 1938 cooperative funds for controlling predators in Texas were 26 percent greater than for the previous year. The contributions were in the proportion of 17 percent by the Federal Government, 32 percent by commissioners' courts and wolf clubs, and 51 percent by the State. The fact that 17,057 predators were taken during the year, which was 36 percent greater than in the previous year, does not indicate that predators have been increasing in Texas. District Agent C. R. Landon explains that the increased catch was due largely to the extension of control activities to several heavily infested counties in southern Texas, an area in which little control work had been done.

Hawks Valuable in Rodent-Control.--The value of hawks in rodent control was demonstrated last spring in Grand County, Colo., when the Colorado River overflowed its banks and inundated meadow lands, reports District Agent W. E. Riter. Large numbers of ground squirrels that had

taken refuge on meadow knolls were preyed upon by hawks. Fifty-two hawks were observed on one narrow meadow strip, and ranchers seeing them at work appeared pleased.

Pocket Gopher Main Rodent-Control Problem.--Control of pocket gophers has become one of the greatest rodent-control problems in Texas, reports District Agent C. R. Landon. Cooperation of farmers, however, has been helpful in making progress in this work. In the Upshur County project, under supervision of G. A. Wakefield, 358,882 acres of infested lands were treated during the fiscal year 1938, with 98 percent of the resident farmers cooperating.

Boundary Commission Cooperates in Rodent Control.--A trapper working under the supervision of District Agent Landon has been employed by the International Boundary Commission to trap and poison gophers along 75 miles of a levee in El Paso and Hudspeth Counties, Tex. Bait is being furnished by the Reclamation Service and El Paso County, and traps by the two cooperating agencies and the Boundary Commission.

Rat-Control Progresses in Galveston.--A public-health inspector recently reported to the U. S. Surgeon General that the wharves in Galveston, Tex., where rat-control has been under way, are practically free of the rodents. Other wharves not included in the control campaign, the inspector said, were badly infested. He recommended that operators of these wharves be required to institute control measures immediately, or that the ships be fumigated before leaving the docks in case of noncompliance. Control operations on the wharves were conducted by Jack M. Plummer, under supervision of R. B. Hickerson, of the Texas District.

Important Work Done in Coyote Control.---Bernard Erickson, 18-year old predator hunter of the Wyoming District, managed to trap and den 52 coyotes in May, the first month he began work as a Federal hunter. District Agent Adolph Hamm states that the new hunter had gained considerable experience while accompanying another Wyoming hunter who was checking trap lines.

Oliver S. Robinson, assistant to Mr. Hamm, made good use of his new rifle with a special scope by shooting an old three-legged female coyote at 350 yards on the T7 ranch south of Gillette. The ranch foreman called the animal his "\$300 coyote," as it had been killing his sheep and lambs every spring.

An examination of the stomach contents of a female coyote killed in Lincoln County by Hunter Charles Parkin, of the Wyoming District, disclosed hearts, livers, and lungs from six lambs.

Favor Wildlife Conservation.--Thomas B. Murray, formerly district agent of the Idaho District before joining the Division of Federal Aid in Wildlife Restoration, reports that the Idaho Cattle and Horse Growers' Association adopted a resolution at its convention at Pocatello, May 31 to June 1, favoring the handling of wildlife problems in the State by trained personnel under a nonpartisan game commission. Other recommendations made by the association included closing seasons over parts of the State on upland game and bighorn sheep; cooperation of the State Game Department with the Survey to make funds under the Pittman-Robertson Act available for wildlife restoration; taking steps to establish a cooperative wildlife research unit; providing adequate predator control within the State to protect livestock and wildlife; and controlling injurious rodents on public and private lands to increase the carrying capacity of livestock and game ranges.

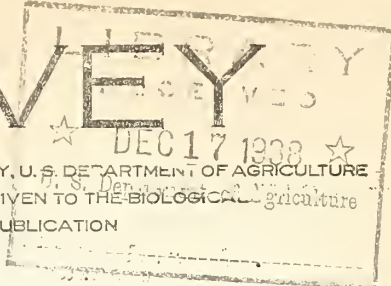
Sylvatic Plague Reported in Wyoming.--Dr. C. R. Eskey, of the U. S. Public Health Service reported on July 8 that 10 ground squirrels taken last June in Uinta County, Wyo., showed sylvatic-plague infection. The disease was also found in a pool of fleas taken from 9 of the rodents. This is the first positive case of the disease appearing among wild rodents in Wyoming. Dr. Eskey also reported plague infection in pooled tissue from 30 ground squirrels taken on Plempton Creek, 10 miles north of Wisdom, Beaverhead County, Mont.

Mississippi Law Requires Permits for Exterminators.--Commercial rodent exterminators operating in Mississippi must hold State permits, according to a copy of a new State law received from District Agent Robert B. Deen. Regulations governing the operation of commercial exterminators are promulgated by the State Plant Board. Cooperative rodent-control projects in Mississippi under Bureau supervision are not affected by the new legislation.

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THE SURVEY

ISSUED MONTHLY FOR THE PERSONNEL OF THE BUREAU OF BIOLOGICAL SURVEY, U. S. DEPARTMENT OF AGRICULTURE
CREDIT FOR MATTER REPRINTED FROM THESE PAGES SHOULD BE GIVEN TO THE BIOLOGICAL SURVEY AS A BUREAU, NOT TO "THE SURVEY" AS A PUBLICATION



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GENERAL NOTES

Cooperation Requested (an Editorial).—Notes for THE SURVEY should be sent to the Division of Public Relations as soon as the events they recount or the information they report is known, rather than prepared in a group at the last minute. They should be double-spaced on yellow paper, and each note, no matter how short, should be on a separate sheet. These practices make it easier to assemble the notes, and they obviate waste of editorial time in running down notes from those who may wait till a deadline date. Sending notes regularly, while the information is news, also has the advantage of keeping the Division of Public Relations informed of matters important in connection with the Bureau's press and radio work or of the whereabouts of officials whom writers and others may wish to interview. Thus a maximum return from time devoted to writing SURVEY notes may be realized. Growth of the Bureau has required added time in preparation of THE SURVEY, and the work can be handled well and with an economy of time only through close cooperation.

Attends Meetings and Dedication of Refuge.—On September 1 and 2 Dr. Gabrielson attended the meeting of the Western Association of State Game and Fish Commissioners at Lake Yellowstone, Wyo. Later he visited the Malheur and Charles Sheldon Refuges, and in Portland, Ogden, Denver, and Des Moines. He went to New England on October 9, visiting various points of interest, including the Moosehorn Refuge, and on October 15 attended the dedication of the Pymatuning Waterfowl Refuge in Pennsylvania. On October 25 the Chief spoke at the meeting of the National Association of Audubon Societies in New York on the subject "Wildlife Management as Practiced by the Biological Survey." Dr. Gabrielson started for Florida on an inspection trip on October 27.

A.O.U. Meeting Held in Washington.—A paper on "The Individual vs. the Species in Migration Studies," by F. C. Lincoln; one on "The Breeding Birds of the Eastern Kentucky Mountains" (read by title), by Dr. Lawrence E. Hicks; and motion pictures of "Birds of the Western Arctic," by Charles E. Gilham, were presented at the 56th stated meeting of the American Ornithologists' Union held in Washington the week of October 17. On October 21 the Union's annual all-day field trip was made to the Patuxent Research Refuge, more than 200 persons participating.

Dr. Gabrielson was elected a Fellow of the Union, and Mr. McAtee, who resigned as treasurer after 18 years of service, was elected a member of the Council. Mr. Henderson, Mr. McAtee, and Mr. Lincoln were members of the local committee on arrangements for the meeting.

Authors Receive Suggestions.--A mimeographed leaflet entitled "Further Remarks on Writing for the Biological Survey," (Sept. 1938, 7pp.) has been sent to all field offices and to leaders in Washington. Written by W. L. McAtee, the leaflet contains suggestions on good writing, giving hints on how authors may improve their style and more clearly express themselves. Anyone who has not received this leaflet or its predecessor, "Preparing Scientific Manuscripts for the Biological Survey" (May 1937, 10pp. Mimeographed), also written by Mr. McAtee, may obtain copies of either by applying to the author.

Confers on Game Management.--Asbury Roberts, of the Missouri Conservation Department's law enforcement division, conferred with game-management officials of the Bureau on August 31. Before coming to Washington Mr. Roberts attended the Pennsylvania Game Commission training course for officers.

Chinese Pheasants Sent to Costa Rica.--Cooperating with the Maryland State Game Department, the Biological Survey has recently completed arrangements for the delivery of 12 Chinese pheasants raised at the Maryland State Game Farm to the United States Minister at Limon, Costa Rica.

ADMINISTRATION

Memoranda to Field Officers Issued.--Following is a list of the memoranda issued in the "Administrative Field Office" (AFO) series since the last issue (July-August 1938) of the Survey:

- No. 21. Revised. Amendment No. 6. Instructions in solicitations and acceptance of bids. 1. Provision of the Eight-hour Law to be included in all contracts which may involve employment of laborers and/or mechanics. 2. Certifications which may be required of contractors. (October 17.)
- No. 21. Revised. Amendment No. 6. (Supplement) (October 29.)
- No. 27. Revised. [Supersedes Nos. 27-R, June 12, 1937; 27-R-1, and 27-R (Sup.)]. Restrictions on expenditures for purchase and maintenance of Government-owned motor-propelled passenger-carrying vehicles; motor vehicle operation reports. (September 28.)
- No. 33. Revised. (Supersedes Nos. 33, 44, 56, 56-1, 56-2, and 223.) Transportation of Government property. (September 15.)
- No. 33. Revised. (Supplement No. 1) Report of Department bills of lading used for transportation paid from emergency (ERA or WPA) funds. (October 31.)

- No. 57. Amendment No. 2. Cooperation with State Directors for the National Emergency Council. (August 4.)
- No. 96. Amendment No. 2. Travel by commercial air lines requiring advance authorization by the Secretary. (August 27.)
- No. 129. Revised. Observance of local, State, and territorial holidays. (October 1.)
- No. 213. Revised. Certifications in support of invoices or public vouchers for purchases and services other than personal. (October 13.)
- No. 221. Amendment No. 4. Recording and reporting personal-injury and property-damage accidents.--WPA projects. (August 27.)
- No. 224. Amendment No. 1. Application of certain provisions of permanent leave regulations to "duration of work" employees. (August 12.)
- No. 243. Parking meter fees - not payable from Federal funds. (August 30.)
- No. 244. Participation in commercially sponsored radio broadcasts. (September 14.)
- No. 245. Procurement of rubber stamps. (September 16.)
- No. 246. Loan of vehicles to Post Office Department for use in handling of Christmas mail. (September 24.)
- No. 247. Monthly reports on purchases (consolidated by regional directors). (September 30.)
- No. 247. Amendment No. 1. Monthly report of purchases--ERA projects. (October 13.)
- No. 248. Withholding of bulk and registered mail between December 10 and December 25. (November 2.)

The following memoranda to field officers have been issued in "Contracts" series:

- No. 13. Amendment No. 1. Purchase of second-hand wiping rags. (August 9.)
- No. 32. Supplement No. 4. Contracts for service-station deliveries of gasoline and lubricating oil in the States of Georgia, Florida, Alabama, Mississippi, Kentucky, and Delaware. (October 18.)
- No. 32. Supplement No. 5. (Supersedes Supplement No. 3 dated July 28, 1938.) Contract for service-station deliveries of gasoline and lubricating oil in the State of Ohio for the period October 1, 1938, to December 31, 1938. (October 7.)
- No. 32. Supplement No. 6. (Supersedes Supplement No. 1 dated July 7, 1938.) Contract for service-station deliveries of gasoline, lubricating oil, lubrication service, and anti-freeze, in the Northeastern States for the period October 1, 1938, to December 31, 1938, inclusive. (October 18.)
- No. 33. Amendment No. 1. Contract for compression cup and universal joint grades of grease for the period ending March 31, 1938; Forest Service Lubrication Guide. (October 3.)
- No. 39. Changes in Procurement Division contracts. (August 5.)

- No. 40. Procurement of propellers for use on Government-owned motor boats for the period July 1, 1938, to June 30, 1939. (August 9.)
- No. 41. Changes in Procurement Division contracts. (August 18.)
- No. 42. Changes in Procurement Division contracts. (September 8.)
- No. 43. Superseding No. 5 and Amendment No. 1 thereto. Mandatory contracts for the procurement of batteries, battery equipment and parts, and automatic battery fillers (Classes 16 and 17, Supplement No. 2). (September 12.)
- No. 44. Supersedes No. 6 dated September 25, 1937. Procurement of anti-freeze compound under a contract expiring February 15, 1939. (September 13.)
- No. 44. Amendment No. 1. Certifications required in connection with vouchers submitted for purchases of Prestone under the contract with the National Carbon Company. (October 20.)
- No. 45. Supersedes No. 8 dated October 5, 1937. Mandatory contract for the procurement of spark plugs for use in Government-owned motor-propelled vehicles and boats to August 31, 1939 (Class 17, Supplement No. 1). (September 13.)
- No. 46. Supersedes No. 2 dated September 2, 1937, and amendments thereto. Mandatory contracts for the procurement of incandescent electric lamps, including lamps for motor vehicles and flashlights, for the period ending August 31, 1939 (Class 17, Supplement No. 3). (September 15.)
- No. 47. Contract covering repair parts for Kohler electric generating sets (to June 30, 1939). (October 4.)
- No. 48. Mandatory contracts covering the rental of adding and calculating machines for the balance of the present fiscal year. (October 4.)
- No. 49. Changes in Procurement Division contracts. (October 18.)
- No. 50. Supersedes No. 23 dated March 30, 1938. Mandatory contracts for the procurement of tires and tubes for use on Government-owned automobiles and tractors, etc., during the period October 1, 1938 to March 31, 1939. (October 13.)
- No. 51. Order of the Department of Labor prohibiting placing of orders against certain contract items. (October 22.)
- No. 52. Changes in Procurement Division contracts. (November 1.)

PUBLIC RELATIONS

Transfers to S.C.S.--Arthur W. Susott, who since June 11, 1936, had served in the Section of Current and Visual Information as assistant, special writer, and editor of THE SURVEY, transferred on October 1 to the Soil Conservation Service to become Regional Information Officer of the Service's Southeast Region, with headquarters at Spartanburg, S. C.

Supervises Richmond Exhibit.--Working on a detail from the Division of Predator and Rodent Control, Frank N. Jarvis supervised an exhibit at the Richmond State Fair, September 26 to October 1, conducted by the Division of Exhibits of the Department. In addition to sets on the various aspects of the Department's work, the exhibits included three Biological Survey sets on winter feeding, upland-game restoration, and waterfowl restoration, which were shown in cooperation with the Virginia State Commission of Game and Inland Fisheries. Live fishes and mammals and birds, including a white-tailed fawn, raccoon, gray squirrels, quail, wild turkeys, and golden pheasants, were shown by the State commission. Mr. Jarvis reports that 125,000 persons attended the fair, and it was estimated that 90 percent of them visited the Department's exhibits.

Gets Color Photos of Ducks.--A series of color photographs of duck concentrations for use in magazine illustrations and as slides was obtained by Howard Zahniser in marshes near Maumee Bay, Michigan, from August 30 to September 2. The photographs were made possible by the cooperation of U. S. Game Management Agent Fred Brint and his assistant Max Kempker. Harold Peters, Atlantic Flyway biologist, enroute through the area, also spent one day helping in the photographic work. Mr. Zahniser accompanied Mr. Brint and Mr. Kempker on early-morning and late-evening patrols of grain fields that were being gleaned by concentrations of ducks, and called on Lou Klewer, outdoor writer, and Norman Hauger, photographer, of the Toledo Blade. Mr. Hauger donated to the Bureau a series of photographs of duck concentrations over grain fields, obtained by him while accompanying Mr. Brint and Mr. Kempker on patrols.

Broadcasts Changed to Friday.--With the fall rearrangement of broadcast schedules, when stations shifted from daylight saving time to standard time, the weekly period for Biological Survey broadcasts on the National Farm and Home Hour was changed to Friday. Owing to cancelations for other Department uses of the time, the new Friday series did not begin until October 21, when Mr. Zahniser participated with Wallace Kadderly, Chief of the Radio Service, and Gordon Zimmerman, of the Soil Conservation Service, in a discussion of "Soil and Wildlife Conservation." On the following Friday, October 28, Mr. Zahniser discussed "Wildlife in Alaska."

Other National Farm and Home Hour broadcasts since the last issue of THE SURVEY included three on wildlife refuges and one on the work of the Bureau's flyway biologists.

On September 1 Arthur W. Susott discussed the Bureau's easement-refuge program in a talk on "Wildlife Refuges on Plains State Farms."

Harold Peters, Atlantic Flyway biologist, in Washington en route from subarctic regions of eastern Canada to his headquarters in Charleston, S. C., joined with John Baker of the Radio Service and Mr. Zahniser on September 8 in a discussion of his work and its relation to waterfowl conservation. The broadcast was entitled, "Ducks Along the Atlantic."

On September 15 Mr. Zahniser discussed "The National Bison Range in Montana," and on September 22 spoke on "The Trumpeter Swan's Refuge," telling of the status of the bird at the Red Rock Lakes Migratory Waterfowl Refuge in Montana this year.

W.P.A. Workers Added.--Joseph H. Brennan has been assigned to the Section of Current and Visual Information to assist in bringing publication and information files up to date and also to assist in back work in connection with the preparation of press statements.

Lewis E. Martin and Frank Palmer, photographers, have also been added to expedite the making of card prints from accumulated negatives. Mrs. Marie H. Frisby and Miss Hazel Arlene Morre have similarly been added to the W.P.A. staff typing data on accumulated card prints and filing the cards. There are now three photographers and five clerical helpers assigned by the W.P.A. to bring the Bureau's photographic work up to date.

Official Publications, copies of which may be obtained from the Division of Public Relations, have been issued as follows:

Regulations for carrying out the Federal Aid to Wildlife Restoration Act and text of the law. Service and Regulatory Announcement B. S. 91, 6 pp. August 1938. Received August 17.

Regulations relating to migratory birds and certain game mammals: 1938. Service and Regulatory Announcement B.S. 92, 12 pp. August 1938. Received August 23.

Seasons for migratory game birds, 1938-39. Poster No. 61 (Bi), 1 p. August 1938. Received August 31.

Officials and organizations concerned with wildlife protection, 1938. Compiled by Frank S. Grimes, Administrative Assistant, Division of Public Relations. Miscellaneous Publication No. 329, 15 pp. October 1938. Received November 4.

Drained areas and wildlife habitats. By F. R. Kenney, Senior Water Utilization Economist, Division of Land Economics, Bureau of Agricultural Economics, and W. L. McAtee, Technical Adviser, Office of the Chief, Bureau of Biological Survey. In Soils and Men, Yearbook of Agriculture, 1938, pp. 77-83, illus. Received Sept. 2.

Sales by the Post Office Department of \$1 migratory-bird hunting stamps, not less than 90 percent of the proceeds of which is made available to the Bureau of Biological Survey, Department of Agriculture, for furthering the program of establishing refuges for migratory birds, 1934-36. Table 625, Agricultural Statistics, 1938, p. 509.

Hunters' licenses issued by States, with money returns, for the seasons 1935 and 1936. Table 626, Agricultural Statistics, 1938. p. 510.

Abstract of fur laws, 1938-39. Compiled by Frank G. Grimes, Administrative Assistant, Division of Public Relations. Wildlife Research and Management Leaflet No. 118, 35 pp. Sept. 1938. Received Sept. 24.

The coordination of mosquito control with wildlife conservation. By Clarence Cottam, Senior Biologist, in Charge Section of Food Habits, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-119, 6 pp. Sept. 1938. Received Oct. 10.

Botulism, a recurring hazard to waterfowl, with notes on recent outbreaks in the United States, Canada, and Australia. By E. R. Kalmbach, Senior Biologist, Section of Food Habits, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-120, 8 pp. Sept. 1938. Received Oct. 19.

Two home-made traps for English sparrows. Prepared in the Section of Food Habits, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-121, 9 pp. Oct. 1938. Received Oct. 22.

Outside Publications.--Articles by members of the Survey appearing in outside publications have been reported as follows:

Aldous, C. M. Woodcock-management studies in Maine, 1937. In 3d North Amer. Wildlife Conf. Trans. pp. 839-846. 1938.

Aldous, S. E. Beaver food utilization studies. Jour. Wildlife Mangt. 2: 215-222, illus. Oct. 1938.

-----Smith, C. F. Food habits of Minnesota deer as determined by stomach analysis. In 3d North Amer. Wildlife Conf. Trans. pp. 756-767, illus. 1938.

Ashbrook, F. G. Preventing wastes of fur trapping when pelts are not prime. In 3d North Amer. Wildlife Conf. Trans. pp. 511-514. 1938.

Bassett, C. F. Soybean oil meal in the summer feeding of adult vixens. Amer. Fur Breeder 11(3): 44. Sept. 1938. (Also in Natl. Fur News 10 (8): 21, Sept. 1938; and Black Fox Mag. 22 (5): 8, Sept. 1938.)

Beed, W. E. Do fur bearers affect upland game birds in winter? In 3d North Amer. Wildlife Conf. Trans. pp. 508-510. 1938.

Bennett, L. J. Redheads and ruddy ducks nesting in Iowa. In 3d North Amer. Wildlife Conf. Trans. p. 647-650. 1938.

----- (With G. O. Hendrickson) Censusing the ring-necked pheasant in Iowa. In 3d North Amer. Wildlife Conf. Trans. pp. 719-723. 1938.

----- (With G. O. Hendrickson) Censusing quail in early fall. Jour. Wildlife Mangt. 2: 169-171. Oct. 1938.

Bloch, Don. Men who have given their names. Nature Mag. 31: 280-283, illus. May 1938.

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- Two island refuges created by President. Press statement 207-39.
Released August 11.
- Colored bands on young gulls help scientists. Press statement 230-239.
Released August 15.
- Beaver skins that end up in China cost South Dakota a fine of \$200.
Press statement 246-39. Released August 18.
- Kentucky land use project goes to Biological Survey. Press statement 320-39. Released August 31.
- Maine land utilization project included in Moosehorn Refuge. Press statement 322-39. Released September 1.
- Lake Isom, Tenn., becomes U. S. waterfowl sanctuary. Press statement 323-39. Released September 1.
- Nine Maryland dove hunters caught first day of season shooting over baited field. Press statement 334-39. Released September 2.
- Waterfowl hunters urged to buy duck stamps early. Press statement 391-39. Released September 18.
- Set up laboratory at Pullman, Wash., for investigating fur animal diseases. Press statement 424-39. Released September 20.
- Trumpeter swan holding own against extinction. Press statement 429-39. Released September 22.
- Biological Survey is assigned part of Florida land utilization project. Press statement 444-39. Released September 24.
- Ohio man is fined \$1,500 for conspiracy to violate Migratory Bird Treaty Act. Press statement 466-39. Released September 28.
- CCC enrollees improve Federal bird refuges set up in Montezuma Marshes, N. Y. Press statement 476-39. Released September 29.
- 64 South Carolina hunters arrested in drive to halt unlawful hunting of doves. Press statement 481-39. Released September 30.
- Oklahoma game rangers get dove-law violators. Press statement 508-39. Released October 6.
- Heavy fines for shooting doves illegally in Texas. Press statement 522-39. Released October 8.
- Duck stamp sales last year biggest on record. Press statement 560-39. Released October 14.
- Wildlife management as practiced by the Biological Survey -- excerpts from an address by Dr. Ira N. Gabrielson ... at the 34th annual convention of the National Association of Audubon Societies, New York City, October 25, 1938. Press statement 617-39. Released October 26.

Plan refuges for upland game birds. Clip sheet No. 1053. Released September 4.

Poor trapping makes coyote a bigger pest to small livestock. Clip sheet No. 1061. Released October 30.

Wildlife on the Souris River refuges. Radio talk by Howard Zahniser, National Farm and Home Hour. August 25.

Wildlife refuges on Plains State farms. Radio talk by Arthur W. Susott, National Farm and Home Hour. September 1.

The National Bison Range in Montana. Radio talk by Howard Zahniser, National Farm and Home Hour. September 15.

The trumpeter swan's refuge. Radio talk by Howard Zahniser, National Farm and Home Hour. September 22.

Soil and wildlife conservation. Radio discussion by Wallace Kadderly, Chief, Radio Service; Gordon Zimmerman, Soil Conservation Service; and Howard Zahniser. National Farm and Home Hour. October 21.

Wildlife in Alaska. Radio talk by Howard Zahniser, National Farm and Home Hour. October 28.

Deer in Orchards. Farm Flash. Released August 19.

WILDLIFE RESEARCH

Wildlife Surveys

Study Deer Food Plants.---Dr. Allen M. Pearson, leader of the Cooperative Wildlife Research Unit, reports that R. J. Wheeler, Jr., graduate scholar, and Tom Atkeson, temporary assistant, spent August in field work near Bellamy. Dyer N. Ruggles and Elmer A. Jones, assisted in the work for a week, beginning August 22.

The main problem of the month was to locate areas that had been logged in certain years. Some suitable ones were found, and data were obtained from several. Such information should give an insight into the effect of logging operations upon the occurrence of deer food plants. It is planned that belt transects and plant frequency data be taken from areas that have been logged during a series of years.

In September, Mr. Wheeler returned to Auburn for class work, and Mr. Atkeson remained in Bellamy to continue the field work on the project through the winter. According to Mr. Atkeson, only two very light rains fell in the vicinity of Bellamy in September, and much of the herbaceous vegetation died or withered badly. In the opinion of natives this condition forced the deer into cultivated fields far more than would normally be expected. It also caused an apparent lessening of herbaceous browsing and an increased dependence upon the coppice of woody plants.

Woody plants found to be browsed most frequently were sweet gum, French mulberry, smilax, sumac, and black willow. The herbaceous plants taken most frequently were lespedeza, partridge pea, aster, pussley, milk pea, and iron weed.

Release Raccoon Cubs.--The 1938 raccoon reproduction is completed, Dr. E. D. Martin, of the Ohio Cooperative Wildlife Research Unit, stated in a report of the study conducted on the Milan Farm, which has a total raccoon population of about 2,600.

More than 1,400 cubs were produced in 1938. Of these, about 1,000 were to be released in various counties prior to the hunting season, and the remainder retained for breeding stock. Additional acreage of hardening pens for cubs have been created with live trees on which the cubs can develop their climbing muscles.

The following results were obtained in the 1938 breeding season:

Average young
per female

35 yearling females,	20 bore young, 15 did not bear young	2.10
81 two year old females,	73 bore young, 8 did not bear young	3.64
125 three year old females,	116 bore young, 9 did not bear young	3.37
237 aged females,	208 bore young, 29 did not bear young	3.44
(4 or more years)		

Show Survey Pictures.--Clarence M. Aldous and Howard Mendall, of the Maine Cooperative Wildlife Research Unit, spoke at the Campfire Program sponsored by the National Park Service in Bar Harbor, Maine, in August, and showed motion pictures of woodcock and moose. On August 17, Mr. Aldous showed the pictures to the State 4-H Club Camp on the University of Maine campus. He repeated his program for the Camden Anglers Association on August 26.

More Coyote-like Animals Taken.--Four more coyote-like animals were taken from the Edinburg Township, Maine, by Maurice Stevens. Two were pups and were kept alive; the skulls of the other two animals were cleaned at the Maine Cooperative Wildlife Research Unit and forwarded to the Washington Office for identification. The live pups are being held at the State Game Farm at Gray, Maine, for further observations.

Moves Headquarters.--William H. Marshall, junior biologist, changed his address on September 1 to: Bureau of Biological Survey, P. O. Box 1998, Boise, Idaho. He was formerly stationed at the Utah State Agricultural College, Logan, Utah.

Joins Virginia Unit.--On July 1, Henry S. Mosby (M.S. in Forestry, U. of Michigan) reported at the Virginia Cooperative Wildlife Research Unit to begin work on the problem, "The Distribution of the Wild Turkey in

Virginia and Factors Governing Its Abundance." Mr. Mosby's thesis for the Master's degree at Michigan was "The Wild Turkey of the United States with Particular Reference to the Eastern Race (Meleagris gallopavo silvestris)," and his report of the problem just inaugurated, which is a phase of the Unit's major research project, will serve as his dissertation for a Ph.D degree from the University of Michigan. Mr. Mosby has been awarded a Pack Fellowship for 2 years, and an additional sum of \$100 a month from Pittman-Robertson Act funds is being requested for the 2-1/2-year period that will be required to complete the study. Accompanied by C. O. Handley, he observed the turkey propagation methods in effect at Camp Lee. Maps and other materials have been procured, and preliminary plans completed for conducting the study.

Observe Mourning Dove Nests.---Observations on the nests and habits of mourning doves in the vicinity of Lewis, Iowa, are being continued by Elliott McClure, graduate assistant at the Iowa Cooperative Wildlife Research Unit. Records are now available on over 1,100 nests of this species, and 627 doves have been banded. On September 30, 42 active nests remained on the study area.

Study Rice-Field Depredation.---Migrant birds are not slow in consuming the relatively large quantities of rice lost in the fields at harvest time. This was the deduction indicated by data gathered in a study of rice-field depredations in Colorado County, Tex., by Rollin Baker of the Texas Cooperative Wildlife Research Unit.

Baker, who received his B.A. degree at the University of Texas and his M.S. at the Agricultural and Mechanical College of Texas, was assigned September 1 to take part in the Colorado County survey being conducted by the Texas Unit. He has had extended experience in the field on geological, entomological, and natural history expeditions in the United States and Mexico.

Using a steel square 1-foot in size and making 250 casts in each of 6 harvested rice fields, Baker found the following quantities of waste rice available as bird food: (1) 25 grains a square foot, or 74.6 pounds an acre, in fields cut 1 to 3 days before the count, (2) 18.6 grains a square foot, or 55.3 pounds an acre, in fields cut 7 to 10 days before the count, and (3) 9.7 grains a square foot, or 28.9 pounds an acre, in fields cut 14 to 21 days before the count. These data seemingly indicate that although a relatively large amount of rice (1-1/2 to 2 barrels an acre) is lost at harvest, it is rapidly consumed, mostly by hordes of non-game, grain-eating birds.

Migrant great-tailed grackles, cowbirds, and red-winged blackbirds, which arrived in huge flocks about September 15, descended on the rice fields almost at once. Farmers, armed at much expense with shotguns, patrolled fields almost continuously, but with little success. Next year several farmers plan to test the effectiveness of acetylene exploders in frightening birds from rice fields, a practice recommended by H. A. Cardinell, of the Michigan Experiment Station.

Deer Census Technique Studied.---Interesting facts other than the possibility of a census method are revealed in the Census technique studies of Pennsylvania deer that were conducted in Centre and Huntingdon Counties in September by Dr. Logan J. Bennett and members of the Pennsylvania Cooperative Wildlife Research Unit. The pellet group counts on the permanent quadrats used in this study clearly indicate that the changing availability of food causes a movement of the deer. September counts on the experimental areas were quite consistent with those of July and August. After several more months of counts, a complete report on methods, findings, and census possibilities will be written.

The 26 permanent 1/10-acre quadrats located in the Barrens, Centre County, were checked for deer pellet groups during the last week in August. In August the quadrats averaged 3.6 pellet groups, in July, 3.2 pellet groups. The deer population in the Barrens is probably one deer to 15 acres. The consistency in the counts of August, as compared with the July counts, indicates that the possibilities for working out a census technique during summer months are very favorable.

Pellet group counts were also made during the last week in August on the permanent lines in Huntingdon County. These lines are 1/6 chain width, and the total length is 70 chains. The counts during July equaled 0.33 pellet group per 1/10-acre quadrat, and during August 0.77 pellet group per quadrat. The deer population in this region is low compared to the population in the Barrens, Centre County.

Collects Valuable Specimens.---Stanley P. Young, chief of Division of Predator and Rodent Control, during his trip to Alaska collected specimens of Citellus osgoodi near Central, Alaska, thus extending the known range of the species westward from the Yukon Valley. He also collected specimens of Citellus parryii plesuis from new localities around Copper Center, Alaska, and obtained a ground squirrel skull from the ice bed near Cripple Creek, north of Fairbanks, Alaska. Mr. Young brought back the first Bureau specimens of coyote from the Matanuska Valley, as well as numerous Alaskan wolf skins, and arranged to have sent to Washington a number of large wolf skulls and other valuable mammal specimens.

Observe Dove Nestlings' Growth.---The most interesting disclosure this season of the mourning dove study in Alabama concerned the rate of development of early spring nestlings. Dr. Allen M. Pearson, leader of the Alabama Cooperative Wildlife Research Unit, reported that, at the close of August, nearly all of the nestlings placed in captivity during the spring had attained adult plumage. Nineteen of these 1938 adults have been kept to permit observations concerning the earliest age at which nesting occurs. Two females from this group were paired with two 1937 males, and on August 15, two eggs were found in their pen. This leads one to believe that the spring nestlings may contribute materially to late summer and fall nesting. Under normal conditions, the nesting season may continue for 6 to 8 weeks after August 15, when these eggs were laid.

Begin Life History Study.--A complete year-round life history and management study of the ring-necked pheasant in Centre and Lehigh Counties, Pa., was begun August 1 by Pierce Randall, graduate assistant in Zoology, under the direction of Dr. Logan J. Bennett, leader of the Pennsylvania Cooperative Wildlife Research Unit. The study will probably be completed within the next 2 years, Dr. Bennett said.

Mr. Randall carried on ring-necked pheasant and cottontail observations in Centre County from August 1 to 15. The work during that period was concentrated on a 244-acre farm selected as a typical farm area of that region. On August 15, Mr. Randall moved to Macungie, Lehigh County, to conduct fall and winter studies on the ring-necked pheasants. Two areas totaling about 1,500 acres have been selected in Lehigh County as study units. A complete year-round life history and management study of the ring-necked pheasant will probably be made on these areas. At present, Mr. Randall is concentrating on food and cover observations, brood studies, sex-ratio counts, population evaluations, and census-technique studies. The study areas were selected with the aid of W. A. Moyer, district game protector in Lehigh County.

Plan Plantings on Refuge.--On August 1 and 2, Dr. Logan J. Bennett, leader of the Pennsylvania Cooperative Research Unit, accompanied Neil Hotchkiss, of the Section of Food Habits, to the Beaver Meadows Waterfowl Refuge on the Allegheny National Forest to work out plans for planting waterfowl food and cover plants in that area.

Address Game Protectors and Foresters.--Dr. Logan J. Bennett, leader of the Pennsylvania Cooperative Wildlife Research Unit, and Dr. P. F. English delivered lectures before the Game Protectors School at Brockway, Pa., on August 11 and August 25. Dr. Bennett also gave a talk on the cooperative program at the annual meeting of the Pocono Forestry Association at Buck Hill Falls, Pa., on August 24.

Talks at 4-H Camp.--At the Wildlife Conservation 4-H Camp, held at Shocco Springs, Talladega, Ala., Sept. 8-11, Dr. Allen M. Pearson, leader of the Alabama Cooperative Wildlife Research Unit, delivered addresses on "Conservation Program at Auburn" and "Requirements of Game on Farm Lands." This was the first camp of this nature to be held in Alabama.

Complete Pheasant Nesting Survey.--A pheasant nesting survey of Wood and Ottawa Counties, Ohio, was recently completed by D. L. Leedy, of the Ohio Cooperative Wildlife Research Unit. Dr. Lawrence E. Hicks, Unit Leader, reports that in surveying 3,504 acres of meadow in Wood County, Leedy found 1,551 pheasant nests, an average of 44.2 per 100 acres.

Dr. Hicks states that of 272 farmers reporting on number of pheasants in the two counties during the past year, 241 reported an increase, 17 a decrease, and 14 reported that pheasant numbers were about the same. In considering predation factors it is interesting to note that 60 farmers harbored a total of 81 dogs and 203 cats.

Texas Wildlife Federation Meets.--A regional meeting of the Texas Wildlife Federation was held at the Gunter Hotel in San Antonio, Tex., on September 13. Dr. Walter P. Taylor, leader of the Texas Cooperative Wildlife Research Unit, was asked to conduct a round-table discussion to conclude the meeting, which was generously attended by "Hill Country" conservationists. William J. Tucker, Henry W. Flagg, J. W. Chapman, M. Melton, Dean B. B. Harris, and others spoke.

Joins Soil Conservation Service.--Anderson M. Gray, employed at the Alabama Cooperative Wildlife Research Unit as a temporary assistant, recently resigned to accept a position with the Section of Wildlife Management, Soil Conservation Service. Mr. Gray reported for duty in New Albany, Miss., on October 17.

Refuge Impresses Visitor.--On August 18, Dr. D. Irvin Rasmussen, leader of the Utah Cooperative Wildlife Research Unit, conducted Dr. V. E. Shelford of the University of Illinois over the Bear River Refuge, showing him the work of the Bureau in that area. Dr. Shelford was impressed with the results that have been obtained and was particularly interested in the fact that this was a refuge on which man was not only restoring certain areas but was in reality creating desirable wildlife areas on what had previously been entirely waste land.

Leaves Alabama Unit.--F. S. Barkalow, Jr., temporary assistant, returned to Auburn from Washington, D. C., on August 5. He discontinued work with the Research Unit on August 12 and left for the University of Michigan where he will do graduate work.

Walter Rosene, Jr., temporary assistant, worked on the collection of fox stomachs in August, giving them a preliminary examination as they reached the Alabama Polytechnic Institute laboratory.

Use Island as Study Area.--Details of a program to study game birds on an island under natural conditions were completed in August and arrangements were made to place Hugh Ross Newcomb, graduate student from the University of Maine, in charge of the project for the ensuing year. Protection Island, Wash., was chosen as the study area because the game forms observed cannot migrate or range beyond the island limits. This announcement was recently released by Arthur S. Einarsen, leader of the Oregon Cooperative Wildlife Research Unit.

Completion of several years of study on Protection Island, Wash., will eliminate a great deal of supposition regarding the natural phenomena surrounding game birds when they can be limited in their range, yet at the same time be at large to live naturally. It should establish many standards and gauges of reproduction and give a concrete illustration which may be used throughout the United States as a measure by which to work. This 500-acre island lies from 4 to 5 miles offshore at its closest and most remote points, and no records have ever been made of Chinese pheasants attempting to reach the mainland. Chinese pheasants, which will be the species

immediately studied, did not exist on the island until May 1937. At that time eight hens and two cocks were liberated. Shortly after, two hens were found dead, stuck down by birds of prey. At the conclusion of the nesting season, during which time 5 cock birds had been destroyed, the total population on the island was about 45 birds. No accurate information is available of the sex ratio of birds that could be figured in the 1938 breeding season, but at present, through a partial census, it is known that about 125 birds are in residence on the island.

Now it will be possible to keep an intimate day-by-day record of population trends and daily hazards. Hugh Ross Newcomb, a graduate student from the University of Maine, lives on the grounds, and a complete record of the vicissitude of game birds under actual conditions will be obtained. This is one of the most effective methods available for studying game-bird capacities. Pheasant studies in unlimited areas leave considerable opportunity for error in judgment. It is difficult under such conditions to follow the individual birds that are a part of a study.

Small Game Increases.--Arthur E. Einarsen, leader of the Oregon Cooperative Wildlife Research Unit, reports that there is now a greater abundance of small game in the Willamette Valley than there has been in any year since the establishment of the Unit in September 1935. Undoubtedly this is caused by a combination of two factors, the limitation of the shooting kill during the past 1937 season, and the excellent weather conditions during the nesting season of 1938.

Although the number of Chinese pheasants is much lower than desired, perhaps one bird to every 50 acres, this increasing return may encourage a wider public interest with the result that sounder management practices can be enjoyed. By following individual coveys of birds through this period, it is now known that the average brood of Chinese pheasants consists of seven birds. At the same time last year, the survival was only four birds to a brood. This definitely marks a wet nesting season as a great handicap to the normal tendencies of game birds.

Reports on Quail Study.--V.W. Lehmann, field biologist at the Texas Cooperative Wildlife Research Unit, reports that of 24 bobwhite nests under observation in Colorado County 11 hatched, all or in part, and the remaining 13 failed. The failures were due to: snakes (6); heavy rains (2); poultry (4); and infertility (1).

Not a single nest was destroyed by furbearers. Ants of three species, previously unidentified with quail nest destruction, killed eight partially hatched chicks in two nests.

There were 244 quail eggs in 18 clutches, the average size being 13.55 eggs. Of the 168 eggs in the 11 clutches wholly or partially hatched, 129 eggs (77 percent) hatched. Of the 23 percent that did not hatch, 17 eggs (10 percent) were infertile, including an entire clutch of 16; 8 eggs (5 percent) were ruined by ants at hatching time; and the chicks in 14 eggs (8 percent) were unable to emerge from the shell.

Two nests were located in farmyards, 4 in fallow fields, 5 on the margins of cultivated fields, and 13 in grassy pastures, the largest and perhaps the most widely used nesting type.

The earliest quail nest was found on April 30, at which time it contained 6 eggs; the last nest hatched on July 29. Two nests were started in April, 11 in May, and 11 in June. One nest hatched in May, two in June, and eight in July. Prior to June 1, the nest loss was 69 percent, but, after June 1, as a result of improvement in cover and weather conditions, the nest loss dropped to 45 percent. The first young quail were noted on May 30, or one day earlier than in 1937.

Males incubated three nests. The setting birds fed from 6 p.m. to dusk (about 7 p.m.). Eggs were pipped on the 21st day, the young leaving the nest the same day or the following morning.

Conclude Deer Range Study.---A fawn generally spends its first 25 days of life within 30 feet of the spot where it is born. Made on the basis of six excellent field records, this was one of three conclusions concerning deer range in Colorado County, Tex., reached by H. R. Siegler and T. T. Waddell, according to a report by Dr. Walter P. Taylor, leader of the Texas Cooperative Wildlife Research Unit.

Messrs. Siegler and Waddell also concluded that: (1) some does travel as much as 8 miles in 13 days, and some bucks as much as 14 miles in 34 days during rutting season; (2) some deer spend their lives within a few miles of their birthplace.

Mr. Waddell noted 21 cases of deer mortality from January 1 to September 1, 1938. Two fawns were killed by wildcats; 3 starved to death (probably because their mothers had been killed); 1 buck was killed by a train; 13 deer died of screwworms; and 2 fawns were killed by a poacher who was caught by Messrs. Waddell, Lehmann, Davis, and Smith and was convicted on August 20.

Wild-turkey Studies in Virginia.---Gathering information concerning the distribution and abundance of the wild turkey, Henry S. Mosby and D. G. Rivers, of the Virginia Cooperative Wildlife Research Unit, spent September interviewing 167 persons in 30 counties of eastern Virginia. Arrangements were made to collect approximately 500 turkey crops from hunters during the 1938 season.

200 Sage Grouse Lost in Utah.---The loss of approximately 200 young sage grouse at the Strawberry Reservoir was reported on July 16 by Lloyd Gunther, graduate student at the Utah Cooperative Wildlife Research Unit. The next day, in company with Cecil S. Williams, Food Habits Section, and Lee Kay, State Game Department, an investigation was made of this loss. No definite cause was determined, although it appeared that the birds drowned in flying across an arm of the Strawberry Wildlife Refuge Reservoir.

Conduct Nature Study Classes.--A Garden Lovers Short Course, given in Blacksburg, Va., on August 3, was addressed by Charles O. Handley, leader of the Virginia Cooperative Wildlife Research Unit. His subject was "Every Garden a Bird Sanctuary." On August 11 and 12 Mr. Handley, A. B. Massey, and C. P. Patton attended the 4-H State Conservation Camp at Jamestown, Va. Mr. Handley conducted two nature study classes each morning, lecturing on "The Value of Birds," and "Game Birds and Their Conservation," illustrating both lectures with lantern slides and bird skins. Mr. Massey talked on collecting native plants and on plant conservation, illustrating each with lantern slides, while Mr. Patton lectured twice each morning on "Some Interesting Mammals of Virginia," and "The Snakes of Virginia." Mr. Handley also spoke on "Habits of the Bobwhite Quail" and "Quail Propagation" at the Montgomery County, Va., 4-H Camp on August 23 and 25.

Turkeys Liberated in Missouri.--Five hundred 12-weeks-old wild turkeys were liberated in Missouri during October by the Missouri Cooperative Wildlife Research Unit. This completes the turkey liberations in that State for the year. Of the 500 freed, 200 were placed in the Clark National Forest, 250 on the Gardner National Forest, and 50 on the Indian Trail State Forest. All turkeys were leg-banded with Biological Survey aluminum bands.

Early in August, Dr. Paul D. Dalke, of the Unit, inspected the Table Rock, Hurcules, and Carmen Springs refuges with Supervisor J. N. Diehl of the Gardner National Forest. On each refuge, arrangements were made to liberate 150 12-weeks-old turkeys. The Forest Service supplied trucks for transportation. The birds were banded August 9 just before sunset, and the trucks left the B. K. Leach turkey farm by dark, traveling all night so that the birds could be freed by dawn the next day.

On September 15, 25 turkeys were placed in a 30-acre pen at Indian Trail State Forest for observation on their development. Two of these birds were seen with wild birds 2 weeks later, but the other 23 remained in the pen. Since the 30-acre enclosure cannot support these turkeys indefinitely, a small quantity of feed is placed in the pen each day.

On the Hurcules refuge an attempt is being made to control the movements of the birds by liberating them in a 90-acre pen originally constructed for deer. Supplemental feed and the fact that the only available water during the middle and late summer was within the pen helped keep the birds in the vicinity. A similar arrangement for liberation was made on the Carmen Springs Refuge, while on the Table Rock no large pen was available.

W. K. Clark, Jr., graduate assistant, on September 13 assumed field duties on the turkey studies on the Eleven Points Refuge and Clark National Forest.

Continue Raccoon Studies.--Raccoon management studies were continued by Robert Johnson, graduate assistant at the Maine Cooperative Wildlife Research Unit, who spent the first 3 weeks of September on the raccoon study area at Weld, Maine. A study of parasites and food habits was made on one animal, after which it was made into a study skin. An intensive investigation

of garden damage by these animals was conducted, including an attempt to distinguish raccoon damage to corn from that of skunk and porcupine.

A captive raccoon was held in a small pen, and feeding experiments were carried on with garter snakes, frogs, toads, grasshoppers, fresh-water mussels, minnows, apples, and ear corn. All were consumed readily except the toads, which were eaten only with a great deal of reluctance. C. M. Aldous, unit leader, spent 3 days with Mr. Johnson inspecting the progress of this work.

Ecological Studies Under Way.--As part of the ecological survey of Pennsylvania wildlife being conducted by the Pennsylvania Cooperative Wildlife Research Unit, five projects were underway in the past 2 months, Dr. Logan J. Bennett, Unit leader, recently announced. In September, Pierce Randall, graduate assistant in zoology, conducted a study of ring-necked pheasant in Lehigh County. An area of about 1,600 acres was selected at random in that part of the Pennsylvania pheasant range, the object being to get an area typical of the best ring-necked pheasant range in Pennsylvania and to carry on a year-round study. The farmers in the study area have expressed their willingness to cooperate with the project.

Tracy Kuhn, graduate student, spent most of September studying the availability of the respective mast species for wildlife use. He has prepared a report on this phase of the project that states some of the objectives, methods, and difficulties involved.

Russell Norris, newly appointed, graduate student, reported for duty September 15. He graduated from Maine University in June 1938. His problem will be to develop a method of evaluating and typing the respective forest types in relation to the respective game ranges in the State.

Allen T. Studholm, graduate student, will study the ecology of the ruffed grouse in Centre and Huntingdon Counties. A complete ecological study of the ruffed grouse in the respective forest types in central Pennsylvania has been outlined for Mr. Studholm.

John D. Beule spent most of September carrying on field studies on the ecological relationship between the cottontails and woodchucks. He has submitted a report concerning the work on this project from July 1 to October 1, 1938.

Deer Hunt to be Checked in Utah.--During September, Dr. D. Irvin Rasmussen, leader of the Utah Cooperative Wildlife Research Unit, met with officials of the State Fish and Game Department, the Forest Service, and the local sportsmen for the purpose of organizing the check on the deer hunt on the Cache Forest. It was agreed that the Research Unit would conduct one full-time checking station at the mouth of Logan Canyon and two supplementary checking stations in nearby canyons, the local sportsmen to cooperate. The Forest Service is to conduct a station at the mouth of Blacksmith Fork Canyon. The check should be of particular interest because there will be a removal of a limited number of doe deer for the first time in nearly 20 years.

Visit Mammal Laboratories.--During October, in some instances in connection with attendance at the meetings of the American Ornithologists' Union, several persons visited the Section mammal laboratories in the New National Museum. Among them was Carlos Zinser, son of Juan Zinser, well-known Bureau cooperator, Mexico City, Mexico, who is spending 3 or 4 months in the laboratories studying Mexican mammals.

In August Dr. Magnus Degerbol, a distinguished zoologist from Universitets Zoologiske Museum, Kobenhaven, Denmark, spent several days in the laboratory studying Arctic mammals. O. P. Pearson, Academy of Natural Sciences, Philadelphia, Pa., utilized the laboratories to make comparative studies of Panama mammals collected on his recent field trip to that country. On September 21, Gordon W. Jones, of Wilderness, Va., studied mammal specimens at the Museum office and conferred with Bureau mammalogists.

Others who used the research and information facilities of the laboratories included: James Moffitt, San Francisco, Cal.; Laurence M. Huey, Museum of Natural History, Balboa Park, San Diego, Cal.; Dr. Francis Harper, Swarthmore, Pa.; Norman A. Preble, Cooperative Wildlife Research Unit, Columbus, Ohio; Luther Baumgartner, Cooperative Wildlife Research Unit, Columbus, Ohio; A. B. Howell, Department of Anatomy, Johns Hopkins Medical School, Baltimore, Md.; George H. Lowery, Louisiana State University, Baton Rouge, La.; and Thos. D. Hinshaw, Ann Arbor, Mich.

Dr. T. S. Palmer and his wife, Vernon Bailey, Edward A. Preble, and Mrs. Jane S. Elliott, retired Bureau employees, were among the visitors. Dr. Francis Harper and A. B. Howell were also once numbered among the Bureau scientists.

Investigate Anthrax in Texas.--In response to a telephone call from Chief Veterinarian Booth, Texas Livestock Sanitary Commission, Fort Worth, Tex., Dr. Walter P. Taylor of the Texas Cooperative Wildlife Research Unit spent parts of 2 days, August 19 and 20, in the vicinity of Laredo, investigating possible wildlife relations to anthrax. Some tentative conclusions follow:

1. Anthrax was positively diagnosed in two cows and in two deer in the Laredo district last summer. Sixty cows, more or less, and perhaps 10 deer, are supposed to have died from the disease.
2. There was one human case; the patient recovered.
3. The ranchers and veterinarians feel that the disease has been established in the Webb County area for several years. John E. Hearn, State game warden, suspects 25 deer found dead last summer may have died from anthrax.
4. It is unlikely that deer are important carriers. During the summer, when anthrax appears in Texas, deer are relatively sedentary.
5. Black vultures, turkey vultures, chickens, dogs, hogs, cats, opossums, rabbits, guinea pigs, and flies have been found by other workers to be possible carriers. It appears that, besides the above-named species, ravens, caracaras, coyotes, and wolves are potential carriers of the disease in Texas.

6. There is some question as to how serious wild creatures are as carriers of anthrax. If the potential carriers actually functioned to any extent, why is not anthrax more widespread?

7. Since all the vertebrates, including man, may carry the disease, complete control of potential anthrax carriers would be impracticable. It is possible that control efforts might do more harm than good.

8. The disease can be effectively controlled by vaccination of all livestock in anthrax districts, associated with prompt and complete burning of anthrax carcasses.

Observe Small-mammal Relations.--A project was initiated by John Pearce, between September 9-20, at Gale River Experimental Forest (White Mountains, N. H.), to study the small-mammal populations in variations of the spruce forest type soil to supplement Dr. Arthur Jacot's micro soil-faunal work in this type. Sample trap lines were set out at five different sampling sites, and a check line of equal length was set out in the nearest adjacent forest type.

The catches have not been analyzed yet for significance of variation, but they were unusually high, the bulk being red-backed mice (Clethrionomys gapperi ochraceus). The area also proved to be a station for the lemming mouse (Synaptomys), of which two were taken. A point of possible significance was the failure to take any Blarina specimens on either the soil-sample or the check lines.

Heavy rains that preceded the floods of September 21 and 22 in that section interfered with the work, but it is planned to trap on a larger scale for population-per-acre data and to map typical mil-acre quadrats, showing runways, sometime next year.

Inspect Nunivak Island.--From July 17 to August 1, L. J. Palmer and J. W. Warwick inspected biological conditions on Nunivak Island, Alaska, with particular reference to the muskoxen and reindeer introduced there, their relationships to the natives, and the results of the caribou (caribou-reindeer hybrids) experiments. Paul Ivanoff, agent of the Nunivak Development Company on the island, and deputy game protector of the Bureau, assisted in the studies. It was learned that the natives are in excellent condition, despite reports to the contrary, and that the interference of the muskoxen with their welfare was inconsequential. The 31 muskoxen introduced on the island from the Experiment Station, 4 in 1935 and 27 in 1936, had increased to 50, of which 9 were this year's calves, and were widely dispersed over the island. The original shipments were unloaded at Muskox Bay, 6 miles east of Cape Etolin on the north side of the island.

In view of this increase it is apparent that the range and climatic conditions on Nunivak Island are suitable for muskoxen. The animals observed were in good condition and largely shed of wool excepting on top of shoulders. The larger number of animals occur on the western end of the island which is more rocky and dry. In the Cape Etolin area the muskoxen wintered on the ridge between Muskox and Mekerryok Rivers. At the west end of the island the animals wintered on top of Rock Mt. and at the east end they wintered on

top of the Twin Mts. In spring (April, May and June), it is reported that the animals are to be found among the sand dunes along the beach, feeding on the fresh new growth of grasses. It is also a preferred place for calving.

During the summer the muskoxen feed on the drier tundra range between the mountains and the coast and may usually be found along a lake or in a river valley. Here the many small ravine-like depressions of bunch grass and shrub willows offer an abundance of succulent forage.

There are a number of dangerous bogs on the island. It was in one of these near Cape Etolin that one muskox bull was lost in the fall of 1936. When an animal, especially if weak, gets in a bad bog, the chances are that it cannot extricate itself and will die. This danger is minimized, however, by the fact that the muskoxen seem to prefer the drier range areas and in most cases will probably avoid the wet ground where the bogs are found.

Visits Green River Canyons.--From September 18 to 30, Dr. D. Irvin Rasmussen, leader of the Utah Cooperative Wildlife Research Unit, in company with Lee Kay and Earl Clyde of the State Fish and Game Department, Roy DeSpain of Springville, Utah, and Wes Eddington of Salt Lake City, made a trip from the Utah-Wyoming line through the Green River canyons, including Red, Swallow, Brown's Park, Ladore, Whirlpools, and Black canyons, to Jensen, Utah. The trip was made in two specially constructed boats and was organized for the purpose of obtaining a technicolor motion picture record of this little-known part of Utah and to investigate wildlife conditions along the Green River.

Of particular interest was the fact that this is the area where white-tailed deer are supposedly found. Although large numbers of mule deer were seen by the party throughout the trip, no evidence was found of any other species inhabiting the region, and from contacts with men acquainted with the area, no information was gained that would indicate any other species than the regular mule deer had ever been seen. The canyon of the Ladore was particularly rugged, the walls being 2,000 to 3,000 feet in elevation. It was interesting to note that the deer in this area crossed and recrossed the river without hesitating and proved to be good swimmers. Other forms of wildlife were abundant, and of especial interest was the report of antelope, signs and evidence of mountain sheep, particularly in the region contained in a Ladore game preserve of the Utah-Colorado border, an area established as a wildlife refuge under the Taylor Grazing Administration. There was an abundance of beaver and Canada geese, considerable numbers of other waterfowl, an abundant sign of furbearers, and evidence of bears still present in this region.

The trip by river was nearly 125 miles, and the area traversed included the steep portions of the river between Green River, Wyoming, and Jensen, Utah, the total difference in elevation between the two towns being nearly 1,000 feet. So far as known, this area has not been traversed by more than 10 or 12 different parties. A man by the name of Buzz Holstrom, accompanied by a member of the National Geographic Society, preceded this party by 12 days through the area. A French party, consisting of three boatmen, was in the canyon at the time of this trip. This is the first time three groups have been in the area in the same year.

Begin Wild Turkey Census.--Frank B. McMurray has begun a turkey census of the Wichita Mountains Wildlife Refuge, Okla. Colored map pins, a separate color denoting a home range for a large flock or a group of smaller flocks, are being used to plot locations on a wall map each time a turkey flock is observed. The number in the flock, sex when possible, and date is put on the map pin. By early in spring or possibly late this winter enough data should be gathered to insure an accurate turkey census of the Wichitas.

Study Fox Food Habits.--Apparently more fox hunting was done during August than any other month this summer. A corresponding increase was noted in the number of fox stomachs obtained, and at the close of August, 121 had reached the Unit laboratory. All stomachs were given a preliminary examination and then prepared for shipment to the Food Habits Section.

Continue Harris County, Tex., Survey.--Dr. Walter P. Taylor, Leader of the Texas Cooperative Wildlife Research Unit, reports that Tarleton F. Smith and Bernard E. Ludeman spent the month of July on the survey work which started on June 13 in Harris County, one of the largest counties in eastern or central Texas (1,058,560 acres). Harris County is also of significance because the largest city in the State (Houston) is within its borders and it is one of the counties that is becoming increasingly industrialized. The field work will afford opportunities to determine wildlife possibilities close to a large center of population.

In cooperation with County Agent Dan Clinton and Assistant County Agent K. W. Tottenham, Smith and Ludeman completed preliminary inspections and plans for bobwhite quail headquarters cover installations on farms in eight ecologic types in Harris County. Dr. Taylor spent July in examining the farms selected. Some of the members of the Harris County 4-H Clubs are taking interest in the work of quail habitat improvement.

The field party established its first camps during the month; one at Mason Bay near La Porte on the ship channel, the second on the Jim West Ranch, 25 miles southeast of Houston.

Field studies were continued on bobwhite quail, prairie chicken, wild turkey, deer, migratory waterfowl, mourning dove, squirrel, fur animals, and birds and mammals generally.

Visit Nesting Islands.--A trip to the nesting islands of the Great Salt Lake was made on July 11-13 by Dr. D. Irvin Rasmussen, leader of the Utah Cooperative Wildlife Research Unit, with Lee Kay of the Utah State Fish and Game Department, and Cecil S. Williams and Dr. Clarence Cottam of the Food Habits Section. Mr. Kay and Dr. Rasmussen had visited these islands during the nesting seasons for the past several years in an attempt to keep informed on the gulls, pelicans, and other birds that nest there.

The lake was at a low stage. As a result, areas that were ordinarily islands were connected with the mainland bars and flats. Large numbers of birds were nesting only on Bird, Hat, and Gunnison Islands. Gunnison is

one of two areas that are true islands at the present time; all other areas are connected with the mainland. One hundred young pelicans on Gunnison Island, and a series of gulls on Bird Island were banded during this trip.

Cooperate in Wildlife Meetings.--Cooperating with the Extension Service, the Commission of Game and Inland Fisheries, the Virginia Wildlife Federation, the Virginia Cooperative Wildlife Research Unit arranged a program for the Institute of Rural Affairs wildlife meetings, which were held in Blacksburg, Va., July 26-28, 1938. On the same days cooperating with the Commission of Game and Inland Fisheries and the Virginia Wildlife Federation, the Unit conducted the Game Warden's Short Course at Blacksburg.

Foraging Habits of Bison.--General observations were made by C. H. Rouse last summer on the foraging habits of bison on the Wichita Mountains Wildlife Refuge, Okla., including observations of the animals while feeding, and examination of vegetation after being grazed, to determine the plant species and quantity taken. Herd movements also were observed, which indicated a fairly regular grazing rotation over the pasture. A series of permanent study plots is being marked off in the various vegetative types or associations, so that observations, measurements, and photographs may be made periodically to determine seasonal preferences and degree of utilization.

One major plot, 2 meters square, was selected in the buffalo pasture in a tall-grass type (side-oats Grama-Panicum-Sporobolus association) that has not been grazed this season. It is probable that this type will be grazed after the grama-and-buffalo-grass range is used. Two major plots were staked out in a short-grass type (buffalo grass-grama association). On these plots the grama (Bouteloua gracilis) is much more closely utilized than the buffalo grass (Buchloe dactyloides), which may indicate a seasonal preference. A meter-square quadrat was also selected in a short-grass area, which included several clumps of Schedonnardus paniculatus, as well as the buffalo grass and grama. The Schedonnardus has not been grazed and stands out prominently from the closely grazed grasses around it.

One major plot and two quadrats have also been established outside the buffalo pasture on range used by bison and long-horned cattle this summer. Tentative sites for plots representing other conditions have been selected. These plots are outlined with white cord and photographed from a marked camera point. The plants found are listed, and the proportion of species and density of ground cover estimated. Special features may be charted. Measurements are taken of grazed plants, to determine the average height of remaining vegetation, and of ungrazed plants, to determine the average height growth, which indicates the quantity of forage taken. As the grazed vegetation showed little fall regrowth, information was obtained on the species preferred by bison in summer and early fall and the extent grazed.

Food Habits Research

Study New Device.--On September 12 Dr. Cottam accompanied other officials of the Bureau to the Loyalsock State Game Farm northeast of Williamsport, Pa., to witness a demonstration of a specially constructed laboratory apparatus for determining the interrelationship between the meteorological factors of environment and the physiology of wild birds and mammals, and to discuss with State game officials methods of utilizing this equipment in the Bureau's research program.

Floral Map Made of Mispillion River Area.--Late in September, members of the Food Habits Section continued the annual mapping of vegetative type boundaries on an area near the Bombay Hook Migratory Waterfowl Refuge by bringing the type map of the Mispillion River marshes to date. The progressive drying out of this area following wholesale ditching operations has entailed numerous and marked changes in normal ecological balances. The type maps enable the investigators to trace the floristic changes that take place from year to year. This year even more obnoxious weeds and shrubs have replaced the formerly nearly pure stands of valuable marsh grasses. Those who took part in the mapping were Clarence Cottam, Lawrence W. Saylor, Robert H. Gensch, and Herbert Buckalew.

Quadrat Studies in Delaware.--Clarence Cottam, Lawrence Saylor, and Robert Gensch spent four days in September continuing quadrat studies in the Delaware marshes, begun late in 1936. The results show the succession of floral types in a marsh that is gradually dried out by ditching for mosquito control, as well as the reduction of enormous numbers of invertebrates, which form a substantial part of the diet of numerous marsh-inhabiting birds and mammals.

Returns from West.--On August 7 Dr. Cottam returned from an extended field trip, during which he attended the mammal meetings in California, where he presented a paper on the "Early Winter Food Habits of the Black Bear in the George Washington National Forest" in collaboration with A. L. Nelson and with Talbott E. Clark of the Forest Service. He conferred with various Bureau officials on several refuges and spent considerable time studying wildlife problems in a number of the western States.

Completes White-winged Dove Study.--Johnson A. Neff completed his summer's study of the white-winged dove in Arizona and returned to his Sacramento headquarters early in August. During the latter half of the month Mr. Neff conferred with agricultural commissioners in various parts of California, receiving reports that bird depredations in the State were more serious than usual during the summer, especially by linnets and crows. Mr. Neff assisted in judging nature-study exhibits in the educational department of the California State Fair during the first week of September.

Studies Feeding Grounds.--From August 28 to September 9 F. M. Uhler studied waterfowl feeding grounds in Illinois, in cooperation with the Department of Conservation of that State, for the purpose of outlining a planting program to improve the natural supply of wild-duck foods. At the conclusion of that work he joined A.V.S. Pulling in a brief examination of feeding grounds closed to shooting in the Upper Mississippi River Refuge. On September 15 he went to Tuscola County, Mich. where he spent two weeks with Game Management Agent Stephen Creech investigating duck damage to buckwheat. Successful methods of preventing this damage were developed by equipping the fields with a series of revolving metal reflectors, and a central rotating beacon for use after dark.

Waterfowl Food Plants Collected.--Neil Hotchkiss recently returned from the Montezuma Migratory Bird Refuge at Seneca Falls, N. Y., where he inspected experimental plantings as well as natural growths for the purpose of recommending a program of development. He also collected seeds of various species for germination studies and for transplanting at the Patuxent Refuge.

Studies Effects of High Water.--Early in September John J. Lynch visited Catahoula Lake, La., where heavy mid-August rains had brought the water level nearly to the timber swamps. The most abundant and valuable waterfowl food plants, chufa and wild millet, had been killed and other species injured - a confirmation of former conclusions that a permanent impoundment in the Catahoula Lake basin would greatly decrease the production of valuable waterfowl food plants. Chufa had made some growth previous to the flooding and probably will grow still more before the cold weather, so there will be a fairly good supply of food in the lake this year.

Stresses Need for Cooperation.--Observations made at Wheeler Lake, Ala., by Mr. Lynch during the past summer emphasize the necessity of careful integration of malaria control and waterfowl conservation. Valuable contributions to the knowledge of methods of control of marsh "weed" species, and to the ecology of other marsh and aquatic plants are being made by T.V.A. biologists, he reports.

Attends 4-H Club Meeting.--Early in September Mr. Lynch attended the Second Annual 4-H Wildlife Camp at Pollock, La., where he joined in a number of informal group discussions and outlined the purpose and scope of the Bureau's wildlife work. He also prepared an exhibit of the more valuable Louisiana duck-food plants, in which considerable interest was shown.

Inspect Drainage Work.--With Dr. Bourne of the Division of Wildlife Refuges, Mr. Lynch investigated drainage projects in southern Louisiana September 22 and 30. Later the two spent several days going over marsh ecological studies at the Delta Refuge.

Assists in C.C.C. Planning.--Mr. Lynch assisted J. H. Sutherlin and Robert Smith, of the Division of Wildlife Refuges, in setting up a C.C.C. program for the Sabine Refuge October 9. to 13.

Conducts Waterfowl Food and Cover Survey.--During August and September C. S. Williams made reconnaissance surveys of ten of the more important waterfowl areas in Utah, preliminary to detailed studies to provide a background for future management practices. In the latter part of September, he accompanied Dr. Quortrup, of the Section of Disease Control, on an investigation of duck-sickness outbreaks in Montana and North Dakota. In connection with the determination of the possible role of selenium in the loss of waterfowl, the research group at the Bear River Refuge is assisting the University of Wyoming in its chemical studies of waterfowl food plants.

Attends Conference in Yellowstone.--E. R. Kalmbach attended the conference of game commissioners of Western States in Yellowstone National Park September 1 and 2, where he discussed with various interested individuals the Bureau's research work, especially the problem of botulism and its control.

Waterfowl Studies Made.--During the latter part of the summer Mr. Kalmbach visited Malheur, Bear River, Lower Souris, and Crescent Lake Refuges to supervise waterfowl nesting studies and inaugurate a series of juvenile waterfowl transplantings from one flyway to another to learn the degree of flyway attachment of birds that have never made a migratory flight. Six shipments were made. All birds released were banded. He also stopped at Medicine Lake, Mont., where he reviewed with the refuge manager the procedure of salvaging waterfowl affected with botulism.

Bobcats Studied.--During the first week of July C. C. Sperry left Denver headquarters to attend the Mammal Society meeting in Berkeley, Calif., where he presented a paper on the food habits of the peg-leg coyote. Immediately following the meeting he assisted E. E. Horn in a study of the predator-prey relationships on certain California forests. He later obtained stomachs of bobcats from hunters and made a field study of bobcats in relation to other wildlife.

Bullsnakes Incriminated.--During the first week in August Ralph Imler returned to Denver headquarters after studying duck nesting on the Crescent Lake Refuge. He found bullsnakes to be the principal predators there.

Transfers to Refuge Division.--Effective September 16, Robert C. McClanahan, Junior Biologist in the Section of Food Habits, was transferred to the Division of Wildlife Refuges, and has been assigned to inspection work in Region 7, with headquarters in Atlanta, Ga.

Depredations Investigated.--The last half of July Mr. McClanahan investigated gull depredations to the blueberry crop in Maine and recommended methods for prevention. He later investigated a reported annoyance by black-crowned night herons in the town of Winthrop, Mass., and the effects of

certain bird deterrents to keep pigeons and starlings away from public buildings. At Bridgeton, N. J., he advised the police department on methods of eradicating objectionable roosts of starlings, grackles, and robins.

While in Maine, Mr. McClanahan also studied the eelgrass situation. He reports evidence of disease present in all growths seen, but that the general conditions appeared to be improving.

Noted Visitor from India.--Rajah K. S. Dharmakumarsinhji of India, younger brother of the Maharajah of Bhavnagar, visited the Section of Food Habits on August 31, to obtain knowledge of the wildlife problems in this country and their solution. He was interested in the economic importance of various species, and also desired to learn what was being done along the line of preventing, or correcting, bird depredations. He observed Bureau techniques in food habit studies, planning to carry on such work in his native country.

Discuss Wildlife Problem.--Marvin A. Spaulding and L. G. McNamara of the New Jersey Fish and Game Commission visited the Washington office on August 30 to discuss wildlife problems in relation to mosquito control.

Resigns.--Mrs. Edna H. Ball has recently resigned her position with the Bureau to take up her residence in Seattle, Wash., where her husband is establishing a medical practice.

Gets Master's Degree.--Myer Katz recently obtained a Master of Arts degree in biology from the George Washington University; his thesis being entitled "Brachiopods as a Source of Food for North American Birds."

Appointed.--Mrs. Emma Lou Henry has been appointed, effective October 17, as junior clerk-stenographer in the Food Habits Section, by transfer from the Soil Conservation Service.

Distribution and Migration of Birds

Shooting Season Brings Record Number of Returns for Banded Birds.--Opening of the waterfowl season has brought a deluge of returns from banded ducks. An average of 100 reports a day, 95 percent of which are for ducks, are being received, and an all-time record of 178 letters was made on October 31.

Reports from Pacific Flyway.--Luther J. Goldman, Pacific flyway biologist, completed his Alaskan waterfowl investigations about September 1. He states that definite conclusions cannot be expected from a brief field trip during what is said to have been the most stormy late-summer season on record. Reports obtained from residents and airplane pilots, however,

indicate that the whole Yukon Valley from the Old Crow River on the Canadian side across Alaska to the mouth of the Yukon is generally good nesting ground. Mr. Goldman has laid the foundation for future effective work in Alaska with the cooperation of Mr. Dufresne and his assistants.

Mr. Goldman planned to leave his headquarters in Berkeley, Calif., on November 3 to continue waterfowl investigations in Mexico.

Reports from Central Flyway.--George B. Saunders, Central flyway biologist, after completing white-winged dove studies in the lower Rio Grande valley, planned to leave about November 1 for waterfowl investigations on the coast of Tamaulipas, Mexico. He states that since almost all the waterfowl that enter or pass through eastern Mexico seem to remain near the coast, at least as far south as Tabasco and Campeche, there is much more fundamental information to be gained from study in strategic coastal areas between the Rio Grande and Tampico, Tabasco, and Campeche, than from reconnaissance of interior rivers and the very limited areas of marshes and artificial lakes. American pilots flying routes in Tabasco have informed Dr. Saunders that much, if not most, of that State as far inland as the mountain ranges is under water throughout the year. It is known that many pintails, blue-winged and green-winged teals, lesser scaups, and other species are south of the United States when the mid-winter check-up is taken. It would be more important to know what correlative information would be provided by a better knowledge of this Mexican coast.

Reports from Mississippi Flyway.--C. E. Gillham, Mississippi flyway biologist, returned from the Arctic to his headquarters at Edwardsville, Ill., about September 1. He spent 14 days in the ice going from Victoria Island to Tuktoyaktuk on a small schooner, a trader's boat, the last to get out before the freeze-up. He arrived in Aklavik for the second time in the summer on August 20. Mr. Gillham considers this by far his best year in the North. He used a plane for all long trips and saw many birds. On his return to headquarters after attending the A. O. U. meeting in Washington, he addressed the Audubon Society of Des Moines, Iowa, on October 26. In September he gave Dr. Gabrielson, Mr. Darling, and a few others, a private showing of his Arctic movies taken last summer and later shown at the A. O. U. meeting in Washington. He states that he is receiving many requests for showings of these pictures to high schools, Izaak Walton League meetings, and other groups.

Reports from Atlantic Flyway.--After completing waterfowl work in northeastern Canada, Harold S. Peters, Atlantic flyway biologist, returned to North Bay, Ontario, late in August and then visited the banding station of M. J. Magee in Sault Ste. Marie, Mich. He also visited Dr. Karl Christofferson, veteran birdbander of Blaney, Mich., and the Seney Refuge, at Germfask. During September he gathered information on the dove season in the vicinity of his headquarters in Charleston, S. C. Before attending the A. O. U. meeting in Washington he had the opportunity on October 17 of showing the Bombay Hook Refuge near Dover, Del., to Dr. Harrison F. Lewis of the National Parks Bureau, Ottawa, Ontario, who was very helpful to Mr. Peters's investigations in Canada.

Visit Washington Office.--While in Washington at the A. O. U. meeting, the following birdbanding cooperators examined the banding files: Mrs. F. C. Laskey, Nashville, Tenn.; LeRoy Wilcox, Speonk, Long Island, N. Y.; J. B. Calhoun and J. C. Dickinson, of Charlottesville, Va.; and Dr. R. A. Johnson, Oneonta, N. Y. Mrs. Laskey was particularly interested in examining the mockingbird returns, Mr. Wilcox the records of the piping plover, Mr. Calhoun and Mr. Dickinson, returns of chimney swifts, and Dr. Johnson the returns from murre and guillemots.

Interesting Returns from Banded Birds.--Returns of outstanding interest from banded birds are listed in the following table, which shows band number, place and date of banding, and place and date of recovery:

Caspian Tern:

378411 - Mich., St. James, 7/19/25 Va., Charlottesville, 9/24/38

37-404567 - Ont., S. Limestone Is., 6/23/37 Cuba, Oriente, 8/3/38

Blue-winged Teal:

A549080 - Mich., Chippewa Co. 9/12/35 B.W.I., Kingston, Jamaica, 10/11/38

Pintail:

34-551498 - La., Avery Island, 1/18/35 Yukon Territory, Teslin Lake, 9/26/37

Mourning Dove:

37-410721 - Ohio, Lakewood, 6/10/37 Mexico, Leon, Guanajuato, 10/7/38

Chimney Swift:

L17136 - Iowa, Fairfield, 5/13/33 Tenn., Nashville, 8/27/38
(trapped and released)

Bronzed Grackle:

A311691 - Minn., Crystal Bay, 4/25/29 Minn., Orono, 6/22/38

Fur Resources

Returns from Field Trip.--Frank G. Ashbrook spent the latter part of August inspecting the U. S. Fur Animal Experiment Station, Saratoga Springs, N. Y. A building program at the station has been underway for 2 years, and much progress has been made, chiefly under a Federal W. P. A. allotment. Plans have been made for a Bureau-sponsored State project to complete the work. In New York City Mr. Ashbrook took dressed Persian lamb pelts produced at Beltsville, Md., this past season to various raw-fur establishments to have them graded and valued. He also visited Swarthmore, (Pa.) College to discuss the embryological work there with Doctors Robert K. Enders and Thomas R. Forbes. Plans have been made to transfer headquarters from Johns Hopkins University, Baltimore, Md., to Swarthmore, because of better space accommodations for the minks. Dr. Forbes has progressed well with the muskrat work, Mr. Ashbrook reports, but to determine certain phases of development needs more material, which will be obtained as soon as permits for taking wild animals are granted. Hundreds of slides have been prepared and are now being arranged and classified. In a few months approximately 100 minks will be housed on the roof of the laboratory building at Swarthmore, and the experiments planned will practically complete the study being made of the reproductive cycle of the species.

Addresses Fur Farmers in Wisconsin.--At a cooperative fox sale in northern Wisconsin on August 31, Chas. E. Kellogg discussed the Bureau's fur-animal research. There were 150 fur farmers in attendance, some from practically all the Midwestern States and some from California. The sale included an auction of selected bright silver fox skins. En route to the meeting Mr. Kellogg visited a large fox ranch near Milwaukee and discussed with officials at the Wisconsin State College of Agriculture the development of fur-animal experimental work being inaugurated there. Returning through Chicago, he visited a Karakul sheep breeders' organization.

Talks to Conservation Club Camp.--On August 26 Mr. Kellogg discussed the conservation of fur animals before a group of some 60 boys at a week's camp in Hartford County, Md. More than half the boys had had experience in trapping. They were told of the necessity of setting seasons and of the Bureau's efforts to determine prime-fur seasons for various species, and were shown skins of North American fur animals.

Visits Station.--Dr. Thora M. Plitt, recently appointed to the Section of Fur Resources on special fiber studies in cooperation with the Bureau of Animal Industry, visited the U. S. Fur Animal Experiment Station, Saratoga Springs, N. Y. on September 30.

Norwegian Professor Visits Office.--Dr. Agr. S. Berge, professor in animal breeding and genetics, Agricultural College of Norway, Aas, Norway, visited the Washington office on September 9 to obtain information on the Federal fur-animal experimental work and on fur-farming developments in this country. Dr. Berge also gave firsthand information on progress of the silver fox industry in Norway.

Appointed to Important Committee.--George S. Templeton, director of the United States Rabbit Experiment Station, Fontana, Calif., has been appointed a member of the Committee on Cooperation with the American Society of Animal Production, National Research Council, for the year 1938-39.

Addresses Rotary Club.--Mr. Templeton spoke at the Fontana Rotary luncheon during the latter part of September, discussing recent findings at the rabbit station.

Prominent Rabbit Judge Visits Station.--Judge John C. Fehr, of Indianapolis, Ind., director of the American Rabbit and Cavy Breeders Association, visited the rabbit station on September 29, after judging rabbits at the Los Angeles County Fair.

Win Prizes.--Allen Suitor, superintendent at the rabbit station and in charge of 4-H rabbit club work in San Bernardino, reports that members of his club with only 7 rabbits placed every one in the money at the Los Angeles County Fair at Pomona, September 16 to October 2. One was the grand champion doe of the junior show.

Chinchilla Breeders Like Self-feeder.--Breeders of the South American chinchilla visited the rabbit station recently and reported that the self-feeder perfected at the station has materially reduced labor and eliminated waste and contamination of feed.

Disease Control

Field Station Established.--Effective September 16, Dr. Frank D. McKenney was assigned to a new project at the Veterinary College of Washington, in Pullman. His work will be especially concerned with the diseases of fur animals, which activity was made possible through a co-operative agreement between the Survey and the College.

Transferred.--Dr. Don R. Coburn, who has been in charge of a field research station on bird diseases at the Bear River Refuge, has been transferred to the Patuxent Research Refuge. He will continue his investigations on diseases of wild birds. Dr. E. R. Quortrup will direct the work at Bear River.

Appointed.--On October 17 Dr. W. H. Armstrong was transferred from the Food and Drug Administration to work on diseases of fur animals, with headquarters at the Patuxent Refuge.

Waterfowl Losses Under Control.--Extensive losses in waterfowl due to botulism on Medicine Lake, Mont., in September called for the assistance of Dr. Quortrup, who studied the situation and made recommendations. He was accompanied by Cecil Williams, of the Section of Food Habits Research.

New Disease Reported in Domestic Rabbits.--Dr. Edward L. Vail, conducting research in Los Angeles, Calif., has encountered what appears to be a new disease of domestic rabbits. The animals show nervous manifestations involving extreme spasticity of certain muscles, causing them to assume distorted positions. This condition has appeared in several rabbitries, although the actual cause has not as yet been determined.

Quail Tested for Pullorum Disease.--On October 11, Dr. Coburn and Mrs. P. W. Wetmore tested breeding stock on a quail farm near Oxford, Pa., for pullorum disease. Many breeders have feared that losses have been due to this disease, but tests on several farms failed to show that it is responsible for any unhealthy condition in bobwhite.

Experimental Immunization of Minks.--An outbreak of a filterable virus disease on a mink farm in nearby Maryland has been studied during recent weeks. Test immunization administered by Dr. Coburn and Dr. Armstrong appears to have produced an immunity, but observation is being continued.

FEDERAL AID IN WILDLIFE RESTORATION

In the Field.--Mr. Day left Washington October 13, to visit New Mexico, Arizona, California, Oregon, Idaho, Utah, Wyoming, and Colorado. He planned to return November 15.

Confer.--R. M. Rutherford returned to Washington September 5 after conferring with State and Federal officials in Nebraska, Colorado, New Mexico, Arizona, and Oklahoma. On September 19 he left to continue the work in Wisconsin, Indiana, Ohio, Michigan, Illinois, Missouri, Iowa, and Minnesota, returning October 6.

Mr. Rutherford and J. Paul Miller went to Albany October 20 to make final arrangements with New York State officials for Pittman-Robertson projects. They returned October 23.

Mr. Rutherford on October 26 inspected lands in West Virginia proposed for acquisition under the Pittman-Robertson Act.

Second Utah Project Approved.--On August 8 Dr. Gabrielson approved a Federal-aid project for a study of the abundance and distribution of beavers and potential beaver areas on the Wasatch National Forest, Utah. The program also provides for study of beaver influence on stream run-off and other factors determining beaver management practices. Mr. Philip Haas has been selected to conduct the study. The Federal Forest Service, the Utah State Agricultural College, and the Biological Survey are cooperating with the State Game Department in this study. This is the second project approved in Utah, the other having been the nation's first Pittman-Robertson project, reported in the last SURVEY.

Wyoming Plans Bighorn Study.--Wyoming is planning a Federal-aid 5-year study of the status and factors determining the abundance of Rocky Mountain bighorn sheep in northwest Wyoming, by a party to remain in the field the year around. The project, approved October 31, will be under the direction of Dr. John W. Scott, secretary and director of the Wyoming Game and Fish Commission; will be correlated with the work of O. J. Murie, of the Survey; and will have the cooperation of the Forest Service, the zoology and bacteriology departments of the University of Wyoming, and the Biological Survey.

Oklahoma to Restore Bobwhite.--In accordance with a project approved on November 4, the State Game Department of Oklahoma plans to use a portion of its Pittman-Robertson funds for restoring bobwhite where quail populations have been seriously reduced during recent drought years. Birds will be restocked on rehabilitated areas that will be under lease to the game department for not less than five years. Such areas will be closed to all hunting for duration of the leases. Dr. Lyle F. Selko, who received his Ph.D. in game conservation from Iowa State College, will be assigned as technician to the

project. He will make maps and detailed reports on each proposed area, showing food, cover, and water conditions, suggesting improvements needed, and making recommendations as to the feasibility of stocking. Claude Beeson will be in charge of the distribution of the birds and will negotiate the leases of areas selected.

Texas to Make State Survey.--The Texas Game, Fish, and Oyster Commission presented a comprehensive program of investigation designed to make an adequate survey of the wildlife populations of the entire State to determine the opportunities for improvement. Because of its size, the State has been divided into 10 districts, or regions, and a technical biologist experienced in wildlife management assigned to each. These district managers are as follows: Dan Lay, Region 1; H. R. Seigler, Region 2; S. M. Melton, Region 3; Dr. Arnold J. Nicholson, Region 4; W. E. Green, Region 5; A. K. Short, Region 6; Dr. Lee W. Fisher, Region 7; Earl Sanders, Region 8; Charles E. Friley, Jr., Region 9; and P. R. Sime, Region 10. The agencies cooperating with the Texas Game, Fish, and Oyster Commission on this project are: Texas Cooperative Wildlife Research Unit, A. & M. College; Department of Wild Game, A. & M. College; Texas Agricultural Extension Service; Texas Forest Service; U. S. Forest Service; U. S. Soil Conservation Service; Texas Wildlife Planning Council; University of Texas; Texas Agricultural Experiment Station; and the Biological Survey.

Pennsylvania Studies Fur Animals.--To gather information needed in administering fur-animal resources, the Pennsylvania Game Department began with Federal aid on September 28 an economic survey and general inventory of its native fur animals, on a county basis gradually expanding to cover the entire State. In addition to determining relative abundance and distribution of most important species, the department will gather information on the number of citizens engaged in the various fields associated with the trapped-fur industry, the income to the various groups, and expenditures involved. It is expected that the influence of the Pennsylvania bounty system will also be studied. Douglas E. Wade will be in charge of this work, in which the Pennsylvania Department of Agriculture, Pennsylvania State College, and the Biological Survey will cooperate with the Game Department.

New York Begins 5-year Study.--Approved October 31, a comprehensive research project on wildlife problems is now under way with Federal aid in New York. The project comprises five major studies: On ring-necked pheasants, representative farm-game species; cottontail rabbits, woodland game; white-tailed deer, a woodland game species; and mallard and back ducks, migratory game. Each study is designed to determine effective local management techniques, measure the effect of management on game abundance, analyze production-cost ratios, and develop practical large-scale methods. Correlated with these projects will be a comparative disease study. A technician will be assigned to each division, under supervision of Walter Obenauf, trained in wildlife management at Michigan State College and engaged for the past year and a half in New York State. The project is set up on a 5-year basis

and will be correlated with development and acquisition programs under Pittman-Robertson sponsorship. The State College of Agriculture, New York State College of Veterinary Medicine, and the Biological Survey are co-operating with the State Game Department.

Seek Best Feeding Methods in Bay State.--The Massachusetts Department of Conservation expected to begin work November 1 on a Federal-aid project approved October 14 for a study of the winter range and food conditions of black ducks and Canada geese in the Commonwealth. The project includes tests of various feeding methods late in winter and early in spring. If the somewhat limited winter range of southern New England can be made to carry over larger numbers of birds in better breeding condition, it is thought that the birds may more adequately populate the extensive potential summer range, and thereby improve waterfowl conditions in the Bay State. Joseph A. Hagar, who will be in charge of the work, has had wide experience in field ornithology and for the past four years has been State ornithologist for Massachusetts.

New Hampshire Plans Demonstration Area.--A plan proposed by the New Hampshire Fish and Game Department for developing with Federal aid a demonstration and research area near Concord was approved September 9. Near one of the State's most important centers of population, an important feature for all demonstrations, the area is to be intensively developed for wildlife with particular emphasis on the ring-necked pheasant. Rabbits, grouse, ducks, and fur and other species will be given careful consideration. The work will be conducted by Ernest Gould, a technician who received his training and experience in the northeast. The University of New Hampshire, the New Hampshire Forestry and Recreation Department, the Massachusetts State College, and the Biological Survey are cooperating with the State Game Department.

Vermont to Study the Seasons.--A proposal by the Vermont Fish and Game Service to make with Federal aid a comparison of game abundance throughout the State from season to season as a basis on which to set up legislation and regulate seasons was approved September 28. Practical techniques will first be devised by Roger Seamans, a trained technician well acquainted with Vermont conditions. Data will be gathered on migration dates of various game birds, food and cover conditions in relation to game abundance, variation in food conditions from year to year, seasonal shifts in location of game concentrations, and effects of lumbering, fire, and drainage on game abundance and cover conditions. The data are to be tabulated on bookkeeping machine cards. The cooperation of the Vermont Forest Service, Vermont Department of Agriculture, Vermont Farm Bureau, University of Vermont, State Fish and Game Clubs, Vermont Grange, U. S. Forest Service, U. S. Soil Conservation Service, and the Biological Survey has been enlisted.

LAND ACQUISITION

President Signs Refuge Orders.--Five refuges have been established and two others enlarged by Executive orders as follows:

The Lake Isom Migratory Waterfowl Refuge, in Lake and Obion Counties, Tenn., first Federal refuge in the State, was established August 12.

The Cape Meares Migratory Bird Refuge in Tillamook County, Ore., containing approximately 138 acres, was established August 17.

The Kentucky Woodlands Wildlife Refuge in Lyon and Trigg Counties, Ky., containing approximately 96,000 acres, was established August 30. This area, first Federal refuge in the State, is inhabited by wild turkeys, deer, and other wildlife.

The Mooschorn Migratory Bird Refuge in the Town of Edmund, Washington County, Maine, was enlarged by approximately 6,675 acres on August 30.

The Montezuma Migratory Bird Refuge in Seneca County, N. Y., containing approximately 7,500 acres, was established September 12.

The Union Slough Migratory Waterfowl Refuge on approximately 1,334 acres of land in Kossuth County, Iowa, was established September 19.

The St. Marks Migratory Bird Refuge in Wakulla County, Fla., was enlarged by approximately 22,000 acres on September 19.

Surveys and Maps

Wichita Map Ready.--An atlas map of the Wichita Mountains Wildlife Refuge, Okla., to the scale of 1 inch to the mile, has been prepared with the cooperation of the Forest Service. Copies may be obtained from the Division of Land Acquisition.

Confers on Pea Island Case.--Arthur A. Riemer recently returned from Wilmington, N. C., where he conferred with U. S. Attorney J. O. Carr, on the Pea Island Club case, which was expected to come up in court during the latter part of September.

Witness in Condemnation Cases.--On September 2, Arthur A. Riemer and Fred R. Kessler went to Tallahassee, Fla., as court witnesses in connection with condemnations on the St. Marks Refuge. Five cases were disposed of at that term of court, the awards in four being in accordance with contract price. In the other, on which a jury view was ordered, an award for half of an undivided interest was granted. One case was continued until the February term. On the return trip Mr. Riemer and Mr. Kessler conferred at Waycross, Ga., with Mr. Hopkins, of the Okefenokee Refuge.

Detailed to Refuges.--Oswald E. Recroft, assistant cadastral engineer, was detailed in August to the St. Marks Migratory Bird Refuge, Fla., to retrace boundaries for fence location.

Marion E. Phillips, assistant cadastral engineer, was detailed in September to the Bombay Hook Migratory Waterfowl Refuge, Del., to make boundary surveys of areas being added.

During the latter part of September, Kenneth C. Kern, assistant cadastral engineer, was detailed to the White River Refuge, Ark., to make a special topographic survey of part of the refuge for evidence in condemnation action.

WILDLIFE REFUGES

Waterfowl at Hart Mountain.--Superintendent Jean F. Branson of the Hart Mountain Antelope Refuge, Oreg., reports that abundant water in lakes, sloughs, and streams has attracted great numbers of migratory waterfowl to the refuge and adjoining areas and that range conditions there are the best in more than 20 years.

Sends Encouraging Report.--E. R. Sans, superintendent of the Charles Sheldon Antelope Refuge, Nev., reports a fair fawn crop this year, with the antelope and range in fine condition. Sage chickens appeared to be quite plentiful, more doves nested on the refuge than he had noted before, and mallards, pintails, and cinnamon teals nested at all the reservoirs and small potholes. Ducks began to arrive during August, and as many as 5,000 were noted at one time on the Big Spring reservoir. The grass has seeded, and the browse has made a remarkable growth. All permanent springs are running full, many new watering places have appeared, reservoirs are filled to capacity, and many dry lake beds have filled. Mule deer come into the lawn in front of headquarters every night, and visitors greatly enjoy seeing them at close range.

Gets Airplane.--Superintendent Sans has purchased an airplane brought to the refuge on September 19. He reports that in flying over some of the interior refuge area, which he had not heretofore been able to visit on account of absence of roads, he was surprised to note many potholes and small lakes filled with water. His air survey indicated that there are 300 to 500 wild horses ranging from the locality of the Big Spring to the Oregon State line. The landing field at the refuge is being enlarged, and Mr. Sans has begun the construction of a hangar for the plane.

Flag Pole Raised.--A flag pole was raised at the Charles Sheldon Refuge, on September 19, and the first flag hauled up.

Pinto Pony Mixes With Porcupine.--The pinto ponies at the Charles Sheldon Antelope Refuge, Nev., are reported in fine condition. "Sheldon Clipper," the pinto stallion, however, recently had a round with a porcupine so that pliers had to be used to extract about a dozen quills from his nose, some of which were embedded over an inch deep.

Waterfowl Increases Noted.--Between 150,000 and 200,000 mallards were present on the Lower Souris Migratory Waterfowl Refuge, N. Dak., the latter part of October, C. J. Henry, refuge manager, reports. Several hundred geese stopped there during the fall migration, as compared with less than a hundred in former years.

Wildlife Abundant on Lacreek.--Wild fowl were abundant on the Lacreek Migratory Waterfowl Refuge, S. Dak., during the fall migration, Chandler R. Young, refuge manager, advises. The first black duck to be observed on the refuge was seen this fall, when one was banded. Sandhill cranes showed the largest flight in years, and a few of the birds stopped overnight on the refuge. On October 31, more than 40,000 ducks were estimated to be there, of which about 30,000 were mallards, with gadwalls, pintails, lesser scaups, and green-winged teals next in abundance.

Increased Sandhill Crane Flight Noted.--The sandhill crane flight through the vicinity of the Valentine Migratory Waterfowl Refuge, Nebr., was the largest in years, Ward M. Sharp, refuge manager, reports. For the first time since its establishment, a few of these birds stopped on the refuge; usually they fly high and do not stop. The Franklin's gull flight, too, was exceptionally large, and on October 10 it was estimated that about 30,000 of these birds were on Dewey and Middle Marsh Lakes.

Hay Crop Harvested at Elk Refuge.--Harvesting the hay at the Elk Refuge, Wyo., which began on July 8, was completed on September 6, resulting in 37,100 bales, averaging 90 pounds and totaling about 1,669 tons. With the 1,287 tons of baled hay carried over from the previous year, there are now in storage in the hay sheds about 2,956 tons, while 187 tons remain in stacks in the field, making a total of 3,143 tons. The hay was not cut on about 780 acres of irrigated meadow lands so that there is ample food available for any elk that may come to the refuge during the winter, regardless of weather conditions. Twenty-seven acres of oats were cut, from which were threshed 1,163 bushels of grain for feeding the work horses and for use as seed.

About 40 elk remained in the aspen groves along the south side of the Gros Ventre River within the refuge during the past summer, and a few deer were seen during the same period on lands leased from the Snake River Land Co.

More ducks have been observed in the Flat Creek marshes at the refuge than in a number of years, most of them having arrived during September, the greater number being mallards, teals, and gadwalls. About 300 Canada geese also have been staying on the refuge.

Deer Killed at Bison Range.--On the road that leads around the exhibition pasture near headquarters of the National Bison Range, Mont., a young white-tailed buck in August became frightened and ran ahead of a visitor's automobile, finally hitting the fence and breaking its neck.

Nearly 5,000 Visit Bison.--During July, August, and September 2,698 visitors registered at the Bison Range. On September 30 the total of visitors since April 1 was 4,886. They were privileged to view animals held in the exhibition pasture at headquarters, were taken out on the range if they so requested, and used the campground for picnics and camping, some staying overnight.

Last Wild Horse Gone on Bison Range.--Peter Harms, trapper, who has been conducting control operations to eliminate predators at the Bison Range, reported in September the discovery of the carcass of the old wild mare that for many years was an object of much interest there. Dr. Robert S. Norton, in charge of the Range, states that on rare occasions visitors were able to get a glimpse of this mare and were duly thrilled at having seen a genuine wild horse. Her exact age could not be determined, but it is believed that she was at least 25 years old. Sixteen wild horses were enclosed in the Range when the big-game fence was built in 1909, and this mare was the last of the herd.

Fire Does Damage at Wichita.--A picnic party's carelessness caused a fire in the Wichita Mountains Wildlife Refuge, Okla., on the night of October 2, that destroyed many fine trees at the Mount Scott campground and also consumed a large stock of logs that were to be used in furnishing firewood for campers and picnickers at the various campgrounds. It is reported that the fire started when a campfire was built beyond the confines of the regular campground, at an unprotected site, and was not extinguished when the picnic party left. The fire was visible for miles and drew a large crew of fire fighters from the C.C.C. camps at the refuge who got it under control after it had burned about two acres.

Several other fires of a minor nature have occurred recently on and near this refuge, but they were quickly extinguished as a result of the vigilance and prompt action of refuge personnel. The fire hazard from careless campers is great as the grasses have not been heavily grazed this year.

Government Wins Case.--Following a trial, without jury, in the Federal Court at Lawton, Okla., on October 10, Federal Judge Edgar S. Vaught found for the Government in a disputed quarry claim of John M. Hazel on the slopes of Mt. Sheridan, within the Wichita Refuge. This matter has been pending for a number of years, and suit was instituted to compel the defendant to vacate the premises occupied as a quarry site on the grounds that he had no title to the lands and his special use permit had been formally revoked. A motion for a new trial was made, but Mr. Hazel failed to appear at the hearing on the motion, which was therefore overruled by the court.

Study Wichita.--Three members of the faculty of Tulane University, La., on an extended tour of the Western and Southwestern States to study wildlife conditions made a detailed inspection of the Wichita Refuge, and completed their work there in September.

Deer Get Breakfast at Refuge Headquarters.--Superintendent George E. Mushbach, of the Wichita Refuge, has been feeding grain to deer that come to the lawn in the rear of the headquarters morning and evening. On October 21, he reports that 23 does and fawns were there for breakfast and on that

date were accompanied by two fine bucks. The deer show little fear of the person feeding them, but are shy of strangers. From 20 to 50 wild turkeys also come to headquarters for grain.

Fishes Received for Planting.--On October 6, a shipment of 2,150 bass, 12,560 bream, and 500 crappie reached the Wichita Refuge from the Federal Fish Hatchery at Neosho, Mo., for planting in Quannah Parker and Burford Lakes.

Snake and Lizard Fight.--W. E. Drummond, ranger at the Wichita Refuge reports that on October 13 he and Claud Shrader, another refuge employee, saw a fight between a whip snake and a mountain boomer, or collared lizard. Mr. Drummond grasped the snake by its tail, took hold of the lizard, and endeavored to pull them apart, the snake having the lizard by the neck. He finally succeeded in separating the reptiles by grasping the snake just back of its head, forcing it to open its mouth, and so freeing the lizard. Both reptiles were bloody but scampered off in lively fashion.

Large Rattlesnake Killed.--Mr. Shrader on October 12 ran over and killed a 58 1/4-inch rattlesnake that had a full-grown squirrel in its stomach.

Mount Scott Highway Officially Opened.--The Mount Scott Highway at the Wichita Refuge was officially opened on August 14, and it is estimated that about 1,250 cars, containing about 6,000 people, went to the top of the mountain. It is thought that the drive will attract numerous night visitors since the lights of Fort Sill, Lawton, and many distant prairie towns present a fascinating sight from the mountain top.

Visit Wichita.--Joseph J. Barry, from the location department of Warner Brothers Pictures, Inc., called at the Wichita Refuge on October 19 to arrange for filming buffalo for use in one of their pictures. Mr. Barry was accompanied by J. K. Gillette, Division Passenger Agent of the Rock Island Railroad. Major Lilly (Pawnee Bill) also called at the refuge during October to discuss the proposed moving picture, in which he is to appear and in which it is desired to show the Wichita buffalo and longhorn herds. Other visitors included Miss Jessica Dragonette, noted concert and radio star, who was accompanied by Dr. Gore, of Fort Sill. They made a trip to the buffalo pasture with Superintendent Mushbach and were able to see at close range buffalo, elk, deer, and wild turkeys.

Niobrara Museum Attracts Visitors.--During August, more than 500 people visited the small museum at Fort Niobrara Game Preserve, Nebr., containing specimens of wildlife and fossils found on the preserve. An increase in visitors this year has been ascribed to the museum's attractions.

Canvasbacks Now Common Nesters on Malheur.--Canvasback ducks, first reported as nesting on the Malheur Migratory Bird Refuge, Oreg., in the summer of 1937, this year have assumed a position of nesting importance, Superintendent John C. Scharff reports. At the end of the fiscal year, 11 nests

and broods of young had been located, and many other broods have since been seen.

Trumpeter Swan Census Taken.--- Archie V. Hull, refuge manager of the Red Rock Lakes Migratory Waterfowl Refuge, Mont., reports that the trumpeter swan count made this summer in cooperation with the National Park Service showed a total of 93 adults and 55 cygnets on the Red Rock Lakes Refuge, Yellowstone Park, and small adjacent lakes. Last year's count showed 81 adults and 77 cygnets. Mr. Hull advises that of the young birds counted this year, 51 were produced on the Red Rock Lakes Refuge and on small adjacent lakes, the exact number that were counted last year. While 26 cygnets were counted on Yellowstone Park last year, however, only 4 were seen there this year. Five swans died from various causes within the park last year. Mr. Hull feels that the better vegetative cover now on the refuge as a result of this spring's high water will greatly improve conditions for this swan in future years.

Many Gulls and Terns on Medicine Lake.--- Paul T. Kreager, refuge manager of the Medicine Lake Migratory Waterfowl Refuge, Mont., reports that Gull Island, located near the northeastern corner of the lake, is so covered with nests of gulls and terns that extreme care has to be exercised in traversing the area to avoid stepping on the eggs or young.

Ducks Increase on Medicine Lake.--- More canvasbacks, redheads, and ruddy ducks have been observed on the Medicine Lake Migratory Waterfowl Refuge, Mont., this summer than during any other summer since the establishment of the refuge, Mr. Kreager reports. Several ring-necked ducks have also been noted.

New Nesting Birds on Lower Souris.--- Eight new birds nested on the Lower Souris Migratory Waterfowl Refuge, N. Dak., this summer, Refuge Manager C. J. Henry reports. These were the Franklin's gull, horned grebe, western grebe, Cooper's hawk, sharp-shinned hawk, bluebird, eastern phoebe, and Say's phoebe. This increase brings the total number of species nesting on the refuge to 112, of which 14 were ducks.

Eighteen Young Canada Geese Produced on Lower Souris.---Mr. Henry reports that the five pairs of captive Canada geese that nested on the Lower Souris Migratory Waterfowl Refuge, N. Dak., this summer produced 18 young. He advises that the refuge personnel were successful in driving the geese back into the pen at the close of the nesting season, after they were released to prevent fighting among the nesting birds.

Many Shorebirds on Upper Des Lacs Lake.--- Seth Low, refuge manager of the Des Lacs Migratory Waterfowl Refuge, N. Dak., advises that Upper Des Lacs Lake is proving a paradise for shore birds. He estimates that there were at least 100,000 of these birds on the lake in August.

New Nesting Species on Lostwood.-- Four species of water birds nested on the Lostwood Migratory Waterfowl Refuge, N. Dak., this year for the first time since its establishment. They were the horned grebe, eared grebe (appeared in migration in 1937), green-winged teal, and black tern.

Green-Winged Teal Nesting on Arrowwood.-- Refuge Manager Earl W. Craven reports that a brood of green-winged teal was observed on the Arrowwood Migratory Waterfowl Refuge, N. Dak., this summer for the first time since his arrival on the refuge in 1936. He estimates an increase of at least 50 percent in the number of birds nesting on the refuge this year over last year.

New Nesting Records for Sand Lake.--Twenty-seven species of birds have been recorded on the Sand Lake Migratory Waterfowl Refuge, S. Dak., this year for the first time, Philip A. Du Mont, Refuge Manager reports, bringing the total number using this refuge throughout the year up to 220. An estimated 444,000 Franklin's gulls visited the refuge this year, Mr. DuMont reports, and more than 6,000 pairs nested.

Whistling Swans Stop on Waubay.--Watson E. Beed, refuge manager, reports that a flock of whistling swans stopped on the Waubay Migratory Waterfowl Refuge, S. Dak., this fall, the first for this season since the refuge was established.

Ducks Return to Crescent Lake.--Refuge Manager Gilbert E. Wardwell reports that during the last ten days of August large numbers of ducks came back to the Crescent Lake Migratory Waterfowl Refuge, Nebr. Gimlet Lake, near the headquarters, was literally covered and Goose Lake too was much used. Nearly all the lakes had a good duck population.

Geese and Swans Increase on Mattamuskeet.-- Geese and swans were much more numerous on the Mattamuskeet Migratory Waterfowl Refuge, N. C., last winter than in the winter of 1934-35, refuge personnel report. From a population of approximately 15,000 geese and 5,000 swans at that time the winter concentration increased to 60,000 geese and 16,000 swans.

Fish Take on Okefenokee.-- A total of 99,371 fishes were taken by permittees on the Okefenokee Wildlife Refuge, Ga., during the year ended June 30, 1938, Refuge Manager John M. Hopkins reports. Of this number, 90,545 were perch, 3,623 catfish, 2,020 mudfish, 1,633 jackfish, and 1,550 bass.

Purple Martins Concentrate in Tampa.--Fred W. Schultz, patrolman-laborer, reports that firecrackers were used in an attempt to break up a concentration of about 200,000 purple martins in Tampa, Fla., in September.

In Washington.--William T. Krummes, associate refuge manager stationed in the office of Regional Director Gilchrist at Albuquerque, N. Mex., came to Washington July 25 for three months to assist in the formulation of C.C.C. and W. P.A. development plans for refuge areas. He left Washington for Albuquerque on October 18.

Personnel Items--Miss Elizabeth McGrath, senior stenographer in the Washington office, resigned on September 16 to accept a position with the Bureau of Internal Revenue in Philadelphia, Pa.

Miss Ruth E. Riley, assistant clerk-stenographer, was married on August 6 to Bernard Fishman.

Richard M. Tullar was appointed assistant refuge manager at the Malheur Migratory Bird Refuge, Oreg., effective September 1.

Gerald B. Spawn, junior refuge manager, was transferred from the Squaw Creek Migratory Waterfowl Refuge, Mo., to the Valentine Migratory Waterfowl Refuge, Nebr., effective August 1.

Eric B. Lawson, laborer-patrolman, was transferred on September 1 from the Lower Souris Migratory Waterfowl Refuge, N. Dak., to the Lostwood Migratory Waterfowl Refuge, N. Dak.

John D. Connors was appointed junior refuge manager at the Turnbull Migratory Waterfowl Refuge, Wash., effective July 6. He was formerly employed by the Division of Predator and Rodent Control.

Andrew J. Meyer was appointed junior typist at the Lower Souris Migratory Waterfowl Refuge, N. Dak., effective September 1.

George A. Ammann, assistant biologist, formerly engaged in reconnaissance work on the Atlantic coast, was transferred to the office of Regional Director Janzen at Milwaukee, Wis., on July 15.

Vandiver Childs was appointed junior assistant to technician at the White River Migratory Waterfowl Refuge, Ark., on September 1.

The following laborer-patrolmen have recently been appointed: Clarence E. Baker and Murial E. Jacobs, Hart Mountain Antelope Refuge, Oreg., July 1; Harry Rognlie, Arrowwood Migratory Waterfowl Refuge, N. Dak., July 6; Charles A. Keefer, Bosque del Apache Migratory Waterfowl Refuge, N. Mex., August 16; Grover J. Dickey, Boulder Canyon Wildlife Refuge, Ariz. and Nev., August 22; and Harry A. Jensen, Lower Souris Migratory Waterfowl Refuge, N. Dak., effective September 16.

CONSTRUCTION AND C.C.C. OPERATIONS

C.C.C. Officials Confer.--Bureau C.C.C. officials of Regions 7 and 8 conferred at the Lake Mattamuskeet Wildlife Refuge, N. C., on October 24, 25, and 26. In attendance throughout the 3-day session were P. S. Munk Pedersen and R. O. Gustafson of the Washington office; S. M. Ulmer, administrative assistant, region 7; Regional C.C.C. Inspectors J. W. Teckemeyer and M. I. Frost; and Camp Superintendents J. J. Hedrick, Jr., Ralph E. Tittle, H. A. White, Joseph S. Mann, C. A. J. English, P. C. McManama, Neil E. MacDougall, Walter A. Schultz, Walter E. Vroman, and James A. Niedeck. Round table discussions were held on all phases of Bureau C.C.C. operations so as to establish uniform methods of fiscal control, property inventory, program planning, enrollee training, and safety promotion in the two Regions. Among the topics considered was a proposed Bureau manual of C.C.C. instructions, a draft of which was reviewed in detail. An inspection was made of the C.C.C. work performed on the Mattamuskeet Refuge by Camp BF-3. H. W. Terhune attended on October 26 and acted as leader of the discussions.

Inspect C.C.C. Camps.--On October 18 H. W. Terhune, Chief of the Division of Construction and C.C.C. Operations, left Washington for an inspection of the C.C.C. activities of Camp BF-1 at the Bull Island Unit of the Cape Romain Migratory Waterfowl Refuge, S. C. On the return trip Mr. Terhune conferred briefly with C.C.C. officials at the Mattamuskeet Migratory Waterfowl Refuge, N. C., and the Back Bay Migratory Waterfowl Refuge.

Immediately after the C.C.C. conference at the Mattamuskeet Refuge, on October 26, P. S. Munk Pedersen and R. O. Gustafson began inspections of the C.C.C. work at the Bull Island Unit of the Cape Romain Refuge; the Savannah River Migratory Waterfowl Refuge, Ga.; and the St. Marks Migratory Waterfowl Refuge, Fla. They reported that the progress of the work, condition of equipment, camp facilities, and safety conditions were in the main satisfactory, but that in discussions with camp officials recommendations were made that should further improve the operating efficiency of the camps.

E. P. McDermott left Washington on November 1 for Saratoga, N. Y., where he prepared plans, specifications, and material lists for the renovation of and additions to the present headquarters building at the Fur Animal Experimental Station. After completing preliminary plans and arrangements for the construction, Mr. McDermott returned to Washington on November 8.

On October 11 R. O. Gustafson made an inspection of Camp BF-1 Seney Migratory Waterfowl Refuge, Mich., particularly with reference to the operation and maintenance of the automotive and other heavy equipment. Mr. Gustafson reports that excellent progress has been and is being made on the dike construction work.

Change C.C.C. Stations and Districts.--The territories assigned to O. W. Teckemeyer and Arthur F. Miller were changed effective October 15 and October 1, respectively. Under the direction of the respective regional directors, Mr. Miller will continue to supervise C.C.C. activities at Camp BF-2, Medicine Lake Migratory Waterfowl Refuge, Mont., and the camps in Region 9, and in addition will supervise Bureau C.C.C. work in Region 4. Mr. Miller's headquarters remain at Omaha, Nebr. Similarly, Mr. Teckemeyer will, from headquarters established October 15 at Boston, Mass., supervise the recently enlarged C.C.C. activities in Region 3, and Camp BF-1, Seney Migratory Waterfowl Refuge, Mich.

The official stations of Supervising Mechanics H. R. Carr and C. E. Moore have been changed to New Orleans, La., and Omaha, Nebr., respectively.

On September 26 Raymond T. Farrelly, assistant architect, was transferred from the Washington office to the Patuxent Research Refuge, Md., where he is assisting Michael J. Sassani with the plans and construction details for the PWA-WPA building program there.

With the closing of Camp BF-2, White River Migratory Waterfowl Refuge, Ark., P. C. McManama was transferred from that station to Camp BF-3, Bull Island Unit of the Cape Romain Migratory Waterfowl Refuge, S. C. After a brief conference with Washington officials, Mr. McManama reported for duty and assumed the direction of the camp on October 19.

C.C.C. Camp Inspector Appointed.--E. H. Hackenberg assumed duties as C.C.C. inspector for Regions 3 and 5 on October 1 and established headquarters at the regional office in New Orleans, La. Prior to this assignment Mr. Hackenberg was in charge of one of the Bureau camps on the Wichita Mountains Wildlife Refuge, Okla.

Personnel Changes Made.--Changes in the Washington office of the Division of Construction and C.C.C. Operations include the transfer from the Division of Administration on September 14 of Wm. McGowan as junior clerk and the appointment on September 28 of Sara J. Grossman as junior clerk stenographer. Miss Grossman was formerly employed by the Farm Security Administration.

Side Camp for Boulder Canyon.--In the July-August issue of THE SURVEY it was reported that a C.C.C. camp was to be established at the Boulder Canyon Wildlife Refuge, Ariz. Difficulties have arisen that make impossible the assignment of a full-strength company to this place, but arrangements are being made to increase the number of enrollees attached to the side camp that the Bureau operates there so that the recently constructed dikes may be reinforced to withstand the rising waters of Lake Mead.

Establish New Camp.--A new C.C.C. camp was established at the Tuckahoe (N.J.) State Fish and Game Reservation on October 24. The development work at this location is being done under the direction of the Bureau in cooperation with the New Jersey Department of Conservation and Development. Final arrangements for the establishment of a camp were made by R. O. Gustafson who, on October 18, conferred with C.C.C. and State officials in New Jersey with reference to the transfer of necessary personnel and equipment to the Tuckahoe location.

Bureau Camps Closed.--At the end of the 11th camp period the following Bureau camps were closed: Wichita Mountains Wildlife Refuge, Camp BF-2, Okla.; Charles Sheldon Antelope Refuge, Camp BF-2, Nev.; Malheur Migratory Waterfowl Refuge, Camp BF-3, Oreg.; and White River Migratory Waterfowl Refuge, Camp BF-2, Ark.

GAME MANAGEMENT

Game Management Agents

Geese Unusually Tame.--At least 500 Canada geese were seen on Crane Creek Reservoir, Washington County, Idaho, by U. S. Game Management Agent Riddick during his patrol there September 24. These birds appeared unusually tame and evidently had been raised in the immediate vicinity.

Moves Office.--On September 19 U. S. Game Management Agent Alvin W. Elder established his office at Room 501, 751 South Figueroa St., Los Angeles, Calif., and assumed charge of the district comprising the southern parts of California and Nevada.

Law Enforcement

Had Ducks in Close Season.--In Federal court for the Eastern District of Missouri two game-law violators entered pleas of guilty on October 14. One charged with possessing wild ducks in close season was fined \$25. The other was fined \$100 for similarly possessing 68 ducks and was sentenced to jail for 30 days for selling them.

Possessed Live Buntings.--Charged with possessing 15 live buntings, a resident of Laredo, Tex., arraigned in State court on August 30, pleaded guilty and was fined \$100 and \$11 costs. The evidence was obtained by a State game warden in company with Federal agents.

Hunts with Wrong License.--A fine of \$100 and costs was imposed by a State court in Oregon against a resident of Washington who was hunting deer on October 15 with a resident instead of a non-resident license. The evidence was obtained by State game officers, State police, and a Federal game agent.

Eleven Hunters Fined.--For hunting wild ducks over baited areas in Delaware, five persons found on October 21 by Federal officers were taken into State court and fined \$25 each and costs.

Two hunters in New Jersey found killing wood ducks, one hunting ducks from a sail boat, one killing sandpipers; two in Delaware hunting ducks in close season, and another hunting with an unplugged gun; and one in Pennsylvania hunting ducks in close season, were fined a total of \$153.50.

South Dakotans Prosecuted.--Four persons apprehended in South Dakota during October by a Federal agent and deputy State game wardens were successfully prosecuted in State Court, as follows: Hunting waterfowl after 4 p.m., \$10 and \$3.70 costs; possessing 25 ducks, \$10 and \$3.70 costs; and hunting waterfowl prior to 7 a.m. - one, \$20 and \$9 costs and gun confiscated; the other, \$50 and \$9.50 costs.

Fined by New York Court.--Four persons, apprehended October 15 by a Federal deputy agent and a State game protector in New York for killing wood ducks, were taken into State court and fined \$50 each and costs. These officers found four others the same day hunting ducks over bait. Taken to court, the men were fined a total of \$80.

Hunted Too Early.--Eleven persons hunting wild ducks prior to 7 a.m. in Lincoln County, Wyo., on October 15, were apprehended by a Federal Agent and fined \$10 each in State Court. In Hancock County, Iowa, 14 persons were apprehended by State and Federal Conservation officers hunting wild ducks prior to 7 a.m. on October 15. Arraigned in State Court they were fined \$100 each and costs of \$3.75 each. The court suspended \$75 of the fine in each case.

- Hunters' licenses issued by States, with money returns, for the seasons 1935 and 1936. Table 626, Agricultural Statistics, 1938, p. 510.
- Abstract of fur laws, 1938-39. Compiled by Frank G. Grimes, Administrative Assistant, Division of Public Relations. Wildlife Research and Management Leaflet No. 118, 35 pp. Sept. 1938. Received Sept. 24.
- The coordination of mosquito control with wildlife conservation. By Clarence Cottam, Senior Biologist, in Charge Section of Food Habits, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-119, 6 pp. Sept. 1938. Received Oct. 10.
- Botulism, a recurring hazard to waterfowl, with notes on recent outbreaks in the United States, Canada, and Australia. By E. R. Kalmbach, Senior Biologist, Section of Food Habits, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-120, 8 pp. Sept. 1938. Received Oct. 19.
- Two home-made traps for English sparrows. Prepared in the Section of Food Habits, Division of Wildlife Research. Wildlife Research and Management Leaflet BS-121, 9 pp. Oct. 1938. Received Oct. 22.

Outside Publications.---Articles by members of the Survey appearing in outside publications have been reported as follows:

- Aldous, C. M. Woodcock-management studies in Maine, 1937. In 3d North Amer. Wildlife Conf. Trans. pp. 839-846. 1938.
- Aldous, S. E. Beaver food utilization studies. Jour. Wildlife Mangt. 2: 215-222, illus. Oct. 1938.
- Smith, C. F. Food habits of Minnesota deer as determined by stomach analysis. In 3d North Amer. Wildlife Conf. Trans. pp. 756-767, illus. 1938.
- Ashbrook, F. G. Preventing wastes of fur trapping when pelts are not prime. In 3d North Amer. Wildlife Conf. Trans. pp. 511-514. 1938.
- Bassett, C. F. Soybean oil meal in the summer feeding of adult vixens. Amer. Fur Breeder 11(3): 44. Sept. 1938. (Also in Natl. Fur News 10 (8): 21, Sept. 1938; and Black Fox Mag. 22 (5): 8, Sept. 1938.)
- Beed, W. E. Do fur bearers affect upland game birds in winter? In 3d North Amer. Wildlife Conf. Trans. pp. 508-510. 1938.
- Bennett, L. J. Redheads and ruddy ducks nesting in Iowa. In 3d North Amer. Wildlife Conf. Trans. p. 647-650. 1938.
- (With G. O. Hendrickson) Censusing the ring-necked pheasant in Iowa. In 3d North Amer. Wildlife Conf. Trans. pp. 719-723. 1938.
- (With G. O. Hendrickson) Censusing quail in early fall. Jour. Wildlife Mangt. 2: 169-171. Oct. 1938.
- Bloch, Don. Men who have given their names. Nature Mag. 31: 280-283, illus. May 1938.

- Coburn, D. R., and Quortrup, E. R. The distribution of botulinus toxin in duck sickness areas. In 3d North Amer. Wildlife Conf. Trans. pp. 869-876. 1938.
- Cottam, C. A fatal combat. Wilson Bull. 50: 140. June 1938.
- The coordination of mosquito control with wildlife conservation. 25th Ann. Meeting J. J. Mosquito Extermin. Assoc. Proc. (1938) 217-223.
- Bourn, W. S. What's wrong with mosquito control? In 3d North Amer. Wildlife Conf. Trans. pp. 81-87, illus. 1938.
- Nelson, A. L. Why study the food of fur animals? In 3d North Amer. Wildlife Conf. Trans. pp. 527-530. 1938.
- Couch, L. K. Forest-wildlife relationship: What has been accomplished through research. Jour. Forestry 36: 913-915. Sept. 1938.
- Crouch, W. E. How can the States best cooperate in Migratory Bird Treaty Act enforcement? In 3d North Amer. Wildlife Conf. Trans. pp. 183-186. 1938. (Read by F. P. Callaghan.)
- Game management. Kentucky Sportsmen 1 (1): 6. Aug. 1938.
- Dalke, P. D. (With Palmer R. Sime) Home and seasonal ranges of the eastern cottontail in Connecticut. In 3d North Amer. Wildlife Conf. Trans. pp. 659-669, illus. 1938.
- Day, A. M. Federal Aid in Wildlife Restoration Act. In 3d North Amer. Wildlife Conf. Trans. pp. 58-61. 1938.
- Dufresne, F. The wildlife situation in Alaska. Field and Stream 43: 15. Oct. 1938.
- Einarsen, A. S. Life history and management of antelope in Oregon. In 3d North Amer. Wildlife Conf. Trans. p. 381-387, illus. 1938.
- Enders, R. K. Fur animal reproductive cycles and their relation to management. In 3d North Amer. Wildlife Conf. Trans. pp. 515-517. 1938.
- Gabrielson, I. N. The hows and whys of annual waterfowl shooting regulations. In 3d North Amer. Wildlife Conf. Trans. pp. 217-223. 1938.
- Applying research to wildlife conservation essential to successful solution of various problems involved. Agr. News Letter (Dupont) 6: 138-139. Oct. 1938.
- Thomomys the engineer. Amer. Forests 44: 453-454, 478-479, illus. Oct. 1938.
- Gigstead, G. Wood ducks in the Illinois River bottoms. In 3d North Amer. Wildlife Conf. Trans. pp. 603-609. 1938.
- Goldman, E. A. New pocket gophers of the genus Thomomys from Arizona and Utah. Jour. Wash. Acad. Sci. 28: 333-343. July 15, 1938.
- Bird refuges. In 1938 Britannica Book of the Year. p. 99. 1938.
- Wildlife conservation. In 1938 Britannica Book of the Year. pp. 720-721. 1938.

Transport Quail.--Ten residents of Mississippi charged with transporting dead quail from Mississippi to Tennessee for sale contrary to the Lacey Act were arraigned in Federal court at Memphis, Tenn., on October 3. Fines were as follows: \$5 (1); \$10 (1); \$20 (1); \$25 (3), and \$50 (4), in addition to costs averaging \$30 each.

Hunted on Sunday.-- Three Ohio residents apprehended on September 21 for hunting on Sunday and without licenses were fined an aggregate of \$274.60 in State court.

Use Feed Bait.--In Federal court for the Middle District of Georgia on September 19, three persons charged with hunting mourning doves with guns not properly plugged and 11 others with hunting mourning doves by aid of feed were fined \$25 each. Three men who killed doves in close season were fined \$25 each and placed on probation for 2 years when arraigned in Federal court for the Southern District of Georgia on October 12.

Open Drives On Dove Violators.--During the month of September extended drives were made against hunters taking doves in violation of Federal law. Cases so far reported are as follows: Arizona, 5; Georgia, 38; Kentucky, 4; Louisiana, 3; Maryland, 12; Missouri, 2; and Tennessee, 40, a total of 104. Of those apprehended, 94 were found hunting doves with the aid of bait. These cases will be prosecuted in Federal courts in the respective judicial districts.

Federal game-law enforcement officers, in cooperation with State officers successfully prosecuted 99 cases in State courts. Fines aggregating \$1,650 and costs of \$705.80 were assessed against these persons for illegally taking doves.

A special drive was made during September in South Carolina against persons unlawfully killing doves and in cooperation with the Biological Survey, State wardens operating under the Chief of the Department of Game and Fish at Columbia, apprehended 64 individuals in Spartanburg, Greenville, Union, and Richland Counties. Four hunters in Richland County killed doves in the close season, and others killed these birds by aid of bait, as follows: Spartanburg County, 48; Greenville County, 4; and Union County, 8. Fines of \$1,220 were collected in 53 cases, and 11 still await trial.

Commercial Marsh Closed.--Five men entered pleas of guilty in Federal Court at Toledo, Ohio, on September 19, to an indictment charging conspiracy to violate the Migratory Bird Treaty Act by placing feed or bait for wild ducks on a commercial hunting marsh operated near Lake Erie. One was sentenced to a year and a day imprisonment, but the sentence was suspended upon payment of a fine of \$1,500 and costs, and the other four were sentenced to 6 months each in jail but placed on probation for 5 years upon payment of fines of \$100 each and costs.

The conditions of probation are that the marsh may not be used for commercial purposes for 3 years; the operators may not manage any marsh for 3 years, must dispose of any wild-duck decoys in possession and not handle

any others for 3 years; must remove dams built on the property for flooding any growing crops and refrain from flooding any part of the property during probation, and that any lease of the marsh now owned or operated shall not permit the erection of blinds in any flooded grain fields.

Shipped Untagged Beavers.--Charged with the illegal shipment of 27 untagged beaver skins from Minnesota to New York, a shipper entered a plea of guilty in Minnesota State court on August 18 and paid a fine of \$50 and costs. The shipper of one beaver skin from St. Louis to New York and the person who transported the pelt by automobile from Colorado to Missouri appeared in the Missouri State court on September 22 and paid a fine of \$25 each and costs of \$10.50.

Pet Shop Fined on Cage Bird Charges.--Entering pleas of guilty to an indictment charging the offering for sale and selling of two pairs each of live zebra finches, society finches, and java sparrows; the illegal possession of buntings; and unlawful transportation of live migratory nongame birds from Missouri to Illinois, the proprietor and manager of a St. Louis pet shop were fined \$60 and \$30 each, respectively, in Federal Court at St. Louis, Mo., on July 16.

Trapper Traced by Pelts.--An agent in New York City reported the arrival of a shipment of three beaver skins on December 7, 1937, from Kansas. Investigation in Kansas disclosed that the pelts had been transported by a resident and were to be used in making a coat. The skins were from animals taken in Colorado. Pursuing the investigation further in Colorado it was discovered that the animals were unlawfully taken. The trapper who had unlawfully taken the animals and shipped the pelts appeared in State court in Colorado on August 27, 1938; entered a plea of guilty, and paid a fine of \$75 and costs.

Alaska Game Law Administration

Unit Created.--In order to coordinate more effectively the administrative functions of the Alaska Game Commission in its relations with the Biological Survey, there has been created in the Division of Game Management a Unit of Alaska Game Law Administration, effective October 3. George A. Hossick will be in charge. The functions of the new unit are to review proposed amendments to the regulations under the Alaska Game Law, the preparation of correspondence and reports in connection with enforcement of the law, the handling of personnel and fiscal matters, and general administrative details.

Summary of Violations.--During the quarter ending September 30, a total of 64 cases were reported. Of 293 furs seized, 280 were beaver skins. Seven game animals and 6 ducks illegally taken were seized. The estimated value of seized articles totaled \$3,277, and fines imposed amounted to \$1,920. Jail sentences totaled 30 days and 16 firearms were seized.

Continues Duck-nesting Study.--During the quarter, L. J. Goldman, flyway biologist, continued his reconnaissance of duck-nesting areas in the Territory. In the Fort Yukon region he was accompanied by Wildlife Agent McMullen, and when he reached Marshall, on the lower Yukon, he was joined by Wildlife Agent Collins for several weeks' travel in the Yukon-Kuskokwim Delta. Mr. Goldman also visited the Bristol Bay area before flying to Anchorage and later taking the southbound steamer from Seward. Mr. Goldman's assignment to the Territory was very much appreciated.

Seattle Seizures.--Work in Alaskan District 15 has been carried on by United States Game Management Agent Webster H. Ransom, with headquarters at Seattle, and other game-management agents and deputies on duty in the Pacific Coast States. Five unsealed beavers and a grizzly bear were seized at Seattle by Agent Ransom. One beaver was seized in San Francisco by Game Management Agent Hugh M. Worcester and Deputy A. H. Elder.

Assists in Waterfowl Study.--Agent Collins of Districts 13 and 14 completed beaver sealing during the first part of July and returned to Marshall, where he made arrangements for a river boat to take Luther J. Goldman, Bureau biologist, and himself down river to make waterfowl investigations. They left Marshall on July 22, traveled down the Yukon to the Kashunak River, thence to the Bering Sea, and returned to Marshall via the south fork of the Yukon on August 14.

Guide Convicted.--Agent White, of District 11, with headquarters at Fairbanks, completed beaver-sealing operations within the district, assisted nonresident hunters, made enforcement patrols, and acted as liaison officer for the several Bureau and Commission projects being carried on in the interior. He apprehended and prosecuted several violators. A registered guide pleading guilty to possession of illegal beavers was fined \$100 and forfeited 20 skins.

Guards Migrating Caribou.--Agent McMullen, of District 10, devoted most of his time during August and September to patrolling the Steese Highway between Fairbanks and Circle guarding migrating caribou. During August Mr. McMullen accompanied L. J. Goldman, flyway biologist, on a trip down the Yukon River as far as Tanana. During the trip Mr. Goldman made waterfowl observations and Agent McMullen sealed beavers, sold licenses, and attended to other Game Commission matters. He also completed an investigation involving the possession of illegal beavers. The violator pleaded guilty, was fined \$25 and costs, and forfeited 25 beaver skins.

Aliens Fined.--Several cases were successfully prosecuted in court by Agent O'Connor, of District 9. Two were alien cases, which resulted in fines of \$100 each. He also apprehended and assisted in the prosecution of two hunters for shooting ducks at 5:30 a.m. with unplugged guns. The hunters were fined \$25 each and both forfeited their guns.

Post-season Trappers Fined.--Several investigations were completed by Agent Carson, of District 8, during the past quarter. Two men, charged with post-season trapping, pleaded guilty before the United States Commissioner at Dillingham and were fined \$85 each. Five men paid fines ranging from \$25 to \$150 for violations involving handling of illegal beavers.

Completes Beaver Sealing.--Agent Benson, of District 7, has completed the sealing of beavers within his district and has made several long patrol trips, laying a carefully planned foundation for enforcement work next winter. He made a plane trip to Fairbanks to confer with Agent White. Later, in company with Assistant Executive Officer Jewell, he traveled from McGrath to Bethel on a fast, newly constructed river boat, powered with outboard motor. Assigned to one of the toughest districts in Alaska, this agent is rapidly bringing about wholesome respect for wildlife regulations along the Kuskokwim River.

Illegal Beaver Skins Seized.--An important case involving an attempted manipulation of illegal beaver skins by a fur dealer was completed by Agent Gallwas, of District 5. The investigation resulted in the apprehension of two violators, one of whom was fined \$200, and the other was fined \$100 and forfeited 43 beaver skins.

Assists Territorial Officials.--Agent Rhode was in the field during most of August and September. At the request of Territorial officials he made an extended trip into the interior, to accompany and assist an officer from the Territorial Treasurer's office in making investigations involving fraudulent coyote and wolf bounty claims. Important evidence was obtained and turned over to the Territorial officials and the United States attorney for further action and numerous game-law violations were investigated. Several days were spent with Mr. Young and Frank Glaser, investigating the predatory-animal situation in District 4. Agent Rhode also spent several days in the Fairbanks district assisting Agent White on caribou patrol.

In addition to cooperating with the Territorial officials, Agent Rhode made several patrol trips in District 4 during July, which covered points near Cordova, Valdez, McCarthy, Kennecott, and Gakona. During the quarter he successfully prosecuted a nonresident at Cordova, who was fined \$50 for trapping without a proper license. An alien at McCarthy was fined \$75 and forfeited six furs and two firearms. A fur dealer at Indian River was fined \$200, and a woman fur dealer was fined \$150. This latter case developed as the result of investigations in which Game Management Agents in Washington, California, and Colorado assisted.

Bull Elk Transferred.--Because of numerous complaints that two elk were damaging gardens and endangering persons near Ketchikan, the bull was captured after considerable difficulty and moved 50 miles to Thorne Arm. It is planned to move the cow at the first opportunity.

Deputy Agent Gareld Banta, under the guidance of Agent Sarber, has been in charge of District 3 and has made general patrol trips in the District.

Moose Smugglers Apprehended.--In one of the most important cases investigated in southeastern Alaska for several years three hunters were apprehended by Agent Sarber, of District 2, and Deputy Huntton for possessing and transporting two cow moose illegally taken in Canada and smuggled into Alaska. The violators are being tried under charges involving both the Alaska Game Law and the Lacey Act. In addition to investigations on the moose case, Agent Sarber devoted considerable time during the quarter to assisting in Districts 1 and 3 and instructing the new Agents Banta and Huntton.

Makes Inspections.--On July 29 the assistant executive officer left Juneau on a 7 weeks' inspection trip through the interior of Alaska. Wildlife agents were called on, offices and headquarters' buildings inspected, property checked, information gathered regarding the conditions of fur and game, and several special investigations completed.

Executive Officer Visits Various Territorial Points.--Executive Officer Dufresne flew to Fairbanks in company with Stanley P. Young on August 6 and from there traveled to Circle via official patrol car. While at Fairbanks, he conferred with newly appointed Commissioner John Hajdukovich, Assistant Executive Officer Jewell, Wildlife Agent White, Predatory Animal Hunter Glaser, and many other people. On August 11 he left Fairbanks by train. At Matamaska Colony, on August 19, he conferred with a group of guides and at Anchorage, on the same day, spent a short time with Wildlife Agent O'Connor. Later in the day, at Seward, he conferred with Commissioner Simons, L. J. Palmer, biologist, and Wildlife Agent Gallwas on problems affecting the Kenai Peninsula sections. Leaving Seward by steamer on August 13, he arrived in Juneau on the 16th.

On September 7, Mr. Dufresne left Juneau by steamer. He arrived at Seward on the 10th, from which point he, with Agent Gallwas and Guide Lucas, accompanied Mr. Palmer and his assistant as far as Skilak Lake. Unprecedented floods delayed poling boat transportation back from this lake until the 19th, on which day he and Wildlife Agent Gray, who had arrived from the west on the Brown Bear, visited Commissioner Simons at his home on Kenai Lake. On September 20 the executive officer left Seward on the Brown Bear and arrived in Juneau on the 25th, conferring enroute with Wildlife Agent Rhode at Cordova.

Returns from Aleutian Island Expedition.--The Department's 117-foot, twin-screw patrol vessel, Brown Bear, returned to Seattle on September 30 for the winter, making the completion of the fourth western Alaska and Aleutian Islands wildlife survey.

New Commissioner Appointed.--John Hajdukovich, former registered guide and longtime resident of the upper Tanana region on July 9 was appointed Game Commissioner for the Fourth Division, replacing Chairman Irving McK. Reed, who resigned because of business pressure. Mr. Hajdukovich's wide acquaintance in the Fourth Division and his varied experiences as United States Commissioner trader, prospector, and miner, combined with the knowledge gained by many years of guiding nonresident hunters and operating pack trains and river boats, should well equip him for his new work.

Agents Appointed.--The enforcement personnel of the Alaska Game Commission has been increased by the addition of two permanent deputy wildlife agents, Robert N. Huntton and Gareld B. Banta, whose appointments were effective July 20 and July 28, respectively. The new deputies will work in various districts in the Territory under the supervision of seasoned wildlife agents before being permanently assigned.

PREDATOR AND RODENT CONTROL

Honored as Explorer.--Stanley P. Young has recently been elected to membership in the Explorers' Club, a world-wide organization of men active in the field of exploration. Club headquarters at 10 West 72d Street, New York City, have been described as "a common meeting place in the world's largest city for these wanderers to all parts of the earth." Mr. Young's candidacy for membership was sponsored by Vilhjalmur Stefansson, famous Arctic explorer.

Since 1906, when he made a trip up the Nehalem River, Oreg., for the Lower Columbia River Fishermen's Association, to obtain scientific data on salmon, Mr. Young has made scientific trips that have taken him to wilderness areas in Mexico, Canada, and various parts of the United States. In 1912, he was a member of the expedition headed by Paul Ogilvie that went to the Selkirk Range, British Columbia, to collect mica deposits and obtain information on the habitat of mountain goats. At the request of a historical group in Vancouver, B. C., in 1914 he journeyed to Princess Louise Inlet in British Columbia to study the burial habits of a coastal tribe of Indians.

In 1921, Mr. Young went to the headquarters of the Conejos River in southern Colorado to make a Biological Survey census of the remaining grizzly bears in that section. In 1934, in Louisiana, he obtained native wolf specimens and obtained night photographs of the animals, which they took themselves by stepping on apparatus that simultaneously set off flash powder and exposed the film. Last year he headed an expedition into northern Coahuila, Mexico, where he obtained photographs of mountain lions in a similar manner and collected specimens of several species of rodents and rattlesnakes.

Captures Elusive Coyote.--The trail finally ended for "The Old Dog," as she was commonly called by the ranchmen because of her crippled and deformed feet, when Hunter Cates trapped her near Aspermont, Tex. This old animal's teeth were practically worn off, and she would tear up three or four sheep for each one killed. Because of these depredations three government trappers had worked and trailed this particular coyote for more than a year. After capturing "The Old Dog," Mr. Cates moved to Abilene, where he caught two more coyotes within the next few days.

Pennsylvania "Wolves" Are Coyotes.--At the request of Seth Gordon, executive director of the Pennsylvania Game Commission, two representatives of this Bureau, E. A. Goldman and D. D. Green, went to Harrisburg, Pa., on

October 28 to determine the identity of two animals recently caught in Elk County, northwest of Ridgway, Pa., by officers of that commission. Examination of these captured animals showed definitely that they were of pure coyote strain. Recommendations were made that the commission take steps to eliminate others of that kind to prevent damage to livestock and wildlife in that district.

Rattler Bites Crew Member.--While working on a prairie dog crew near Van Horn, Tex., Frank Wyckoff was bitten in the leg by a rattlesnake. First aid was rendered by binding the leg above the bite and pouring carbon bisulphide on it. The wound was then cut and allowed to bleed freely, after which kerosene was applied. When the services of a doctor were obtained it was learned that this first-aid treatment had probably saved Mr. Wyckoff's life.

Speaks at Louisiana Meeting.--F. E. Carlough, director of the Control Methods Research Laboratory at Denver, Colo., spoke on the subject of "Rodents in Relation to Sugar Cane Growing," at the International Congress of Sugar Cane Technologists held at University, La., October 24 to November 5.

Beavers Featured in Movie Short.--T. B. Murray, district agent in the Idaho District, reports that during the early part of August a Pathe News cameraman spent some time with Biological Survey, State Game Department, Taylor Grazing, and Forest Service officials making a movie short of beaver transplanting work in Idaho. About 10 men are now engaged in this work. The agencies named are cooperating in payment of salaries, travel, and other expenses incident to this work. Approximately 125 beavers were trapped and transplanted in August.

Rats Put Farmer Out of Business.--Rats cost Douglas Marshall, of Randall County, Tex., \$75 because of their damage to his chicken flock, according to a report by District Agent C. R. Landon. Several days after Mr. Marshall received his baby chicks, rats started killing them and continued until the remainder were sold as 1 1/2-pound fryers. After this experience, Mr. Marshall is putting out poison, trapping, and rat-proofing his buildings.

Plague Found in New Mexico.--Under date of August 20, 1938, Senior Surgeon C. R. Eskey, of the U. S. Public Health Service, reported plague infection in prairie dogs (Cynomys gunnisoni zuniensis) and in pools of fleas from prairie dogs and field mice (Peromyscus sp.) in Catron County, N. Mex. It is believed that these reports present the first evidence of the existence of plague in the State.

Heads Rodent Control in Region 8.--District Agent George B. Lay was transferred on July 21 from Raleigh, N. C., to Boston, Mass., as district agent in charge of rodent control work in Region 8, consisting of the New

England States, New York, Pennsylvania, New Jersey, and Delaware. During the past 3 years the rodent project in Region 8 has expanded rapidly and the personnel has been increased. Five assistants to the district agent and a full-time district investigator of the Control Methods Research Project are now assigned to the area. The cooperative funds available will permit the appointment of additional men to assist in rodent control work in Maine, Vermont, New Hampshire, Massachusetts, and Connecticut. Mr. Lay's new address is 1140 Park Square Building, Boston, Mass.

Hunter Accidentally Killed.--Hunter Charles B. Brown, of Molheur County, was instantly killed on September 18 in an automobile accident.

A faulty steering gear caused the car to run on the soft shoulders of a grade and turn over several times, pinning Hunter Brown underneath and breaking his neck.

Predator Conditions in Alaska.--Mr. Young returned from a field inspection trip in Alaska on September 15, having left Seattle, Wash., on July 22 for points in Southeastern Alaska, where he had an opportunity to make a first-hand survey of wolf conditions in the adjacent islands and to view the so-called tide-water trap sets. After 10 days there he went to Juneau and from there to Fairbanks by plane. In the interior he visited some of the well-known wolf areas between Circle City on the north and Valdez on the south, in areas contiguous to the Steese and Richardson Highways. He was accompanied by Hunter Frank Glaser. A number of wolf and coyote specimens, including skins and skulls, in addition to 17 ground squirrels, were taken there.

Through the splendid cooperation of Regional Director Frank Dufresne, the Alaska wildlife agents, and members of the Juneau office of the Alaska Game Commission, Mr. Young was afforded every opportunity to obtain much first-hand information on the predator problem in the Territory. He found that wolves and coyotes are apparently on the increase in the Territory, in spite of the attempt at control by the bounty set-up. It was learned that the \$80,000 Territorial bounty fund appropriated by the last legislature was exhausted shortly after the first year. Territorial officials felt that there would be an expenditure of \$200,000 for the biennium, making the total expenditure \$110,000 over the sum appropriated, which had been issued as bounty warrants. This is nearly one-tenth of the annual Territorial income.

Enroute back from Seattle through the States, Mr. Young visited Assistant District Agent B. E. Foster, of the Washington district, and the Nehalem Valley area of northwestern Oregon to view the coyote infestation, which apparently has developed there since 1904. He also called at the offices of the Regional Director and District Agent Roy Fugate, in Portland, and stopped at Pocatello, Idaho, to view developments on the supply depot addition, where he conferred with Messrs. Quick and Hirschler. At Chicago, he conferred with Tappan Gregory regarding the mountain lion photographs taken in Coahuilla, Mexico, last year. Mr. Gregory has been diligently working on a compilation of this material, with a view to its publication by the Chicago Academy of Sciences. In the October 1938 issue of the Chicago Naturalist, is an illustrated article by Mr. Gregory entitled, "Lion in the Carmens," describing the results obtained by the expedition to Coahuilla.

Assists in Wolf Fauna Study.--Dr. Eber W. Jeffery, who recently completed some work for the Division of Wildlife Research on a W.P.A. project, for the development of a simple course of study in wildlife conservation, was transferred to this Division in September to compile references on the wolf, particularly as known in early Colonial America. The material is being compiled for use in a manuscript that has been in preparation for some time by Major Goldman and Mr. Young for publication in the North American Fauna series.

Cooperate in Wolf Control.--As a result of a request for relief from wolves, the Missouri Conservation Commission has entered into a cooperative agreement whereby a project on wolf control extending over the State game refuges and parks will be conducted for the next 3 months under the direction of A. E. Gray, of the Oklahoma, Arkansas, and Missouri District. Reports indicate that bobcat control also is necessary in these areas. Mr. Gray will cooperate with I. T. Bode, formerly a member of the Biological Survey, and now director of the State Conservation Commission.

Writes on Former Lion Hunter.--In the August number of American Forests, M. E. Masgrave, formerly of the Biological Survey but now with the Soil Conservation Service, gives a resume of his experience and knowledge of Ben Lilly at the time the latter was employed under his direction as a mountain lion hunter in Arizona and New Mexico. The article depicts Mr. Lilly as one of the most colorful hunters ever employed on the predatory-animal force of the Biological Survey and an outstanding authority on the mountain lion. He had hunted in his earlier life with former President Theodore Roosevelt, and in his collecting work took the type specimen of the wolf (Canis rufus gregoryi) that was named for Tappan Gregory, of Chicago, following the successful self-photography in 1934 of this species in northern Louisiana. The type specimen was taken by Mr. Lilly on April 25, 1905, and is now in the Biological Survey collection at the National Museum. Mr. Lilly died in December 1936.

Cooperate in Exhibit.--The Wyoming-Nebraska District cooperated with the State Game and Fish Commission in an exhibit of Wyoming wildlife shown at the State Fair, September 14 to 17. The display of live animals included a pair of buffalo calves purchased from the Fort Niobrara Game Preserve, Nebr., a young buck and a doe mule deer, and a bear cub. The antics of the cub made her the blue-ribbon attraction of the exhibit. In the predator exhibit were an adult bobcat and kitten, a coyote, a wolf, and a pair of red foxes. The fur-animal exhibit was limited to one Alaskan mink, contributed by a local fur farm. In the rodent display were both black-tailed and white-tailed prairie dogs, a woodchuck, five chipmunks, a thirteen-striped ground squirrel, and two young porcupines. Several live pocket gophers were displayed in a cage containing moist earth in the 2-inch space between the front glass and the back panel. The opportunity to observe pocket gophers at work, digging runways, throwing up mounds, and eating carrots and other vegetables attracted a good deal of attention, many of the visitors spending a long time

watching the exhibit. In addition to the wildlife exhibit, the Survey had a booth depicting a modern trapper's camp. The walls were ornamented with rugs of predators, including those of grizzly and brown bears, a mountain lion, an ocelot, and a coyote. In the center of the booth stood an open tepee containing a sleeping bag and various guns. Surrounding the tepee were traps of various sizes, camp stove, pack saddle, and other camp equipment.

Stole Traps.--District Agent Roy Fugate, of the Oregon District, reports that on September 19, 1938, William Aschenbrenner of Zumwalt, Oreg., was arrested by a State police officer and fined \$25 and court costs of \$8.50 and sentenced to 30 days in jail for the larceny of government traps. The traps were recovered, and jail sentence was suspended on payment of fine and costs.

Killed 15 Rattlers Daily.--Darwin Ivy, of the Texas District, who was transferred to Jeff Davis County, reports that in addition to the prairie dog work being done, his crew killed an average of 15 rattlesnakes each day it worked.

Urn 400 Years Old.--Pocket gophers seem to have turned archaeologists in Harrison County, Tex. J. F. Lentz, an amateur archaeologist of Marshall, Tex., while excavating Caddo Indian burial urns near Caddo Lake during the summer of 1937, uncovered an urn at a depth of 4 feet, in which pocket gophers had made their nest. All urns found were in good condition except for holes made by the rodents in burrowing. Texas University archaeologists say the Caddo Tribe made these burials in 1500 A. D.

Damage Controlled.--An interesting sidelight on the pocket gopher control project in Parker County, Tex., is the report that most of the members of the Rodent Control Association put out a few grains of poisoned grain at each watermelon hill to prevent mole damage. A great number of field mice were found dead, and much of the alleged mole damage was prevented.

Gophers Undermine Roads.--R. E. Sexton, section foreman of the Texas State Highway Department for Titus and Morris Counties, reports that pocket gophers undermining the highways between Daingerfield and Omaha, also east of Omaha on Highway 80, are causing the pavement to break and settle. Large holes keep maintenance crews busy patching the pavement and making fills along the shoulders where the pocket gopher runs wash out.

Take 94,000 Predators.--Complete tabulations show the following numbers of predators by species taken during the fiscal year 1938, with corresponding figures for the two preceding fiscal years:

THE SURVEY

September-October 1938

	<u>1936</u>	<u>1937</u>	<u>1938</u>
Coyotes	64,566	80,299	84,844
Bobcats and lynxes . . .	6,986	7,472	7,189
Wolves	1,115	1,007	1,360
Mountain lions	287	212	255
Predatory bears	173	299	392
Total	<u>73,127</u>	<u>89,289</u>	<u>94,040</u>

The figures show an increase of more than 20,000 coyotes taken during this two year period, while the numbers of other predators except predatory bears have remained about constant. The increase of coyotes over their range during the past few years is reflected in the number taken by cooperative hunters. Bears have also increased in many localities, because greater protection was afforded them. In addition to this cause of increased depredations on livestock, information has been received that in several areas berries and other bear food have been rather scarce during the past season.

Released Predatory Animals.--District Agent Roy Fugate, of the Oregon District reports that O. H. Silvey and J. C. Madron, of Condon, Oreg., were arrested and convicted of molesting government traps and releasing the captured predatory animals near Ferry Canyon, Gilliam County, Oreg., during October. Both defendants pleaded guilty. Silvey was fined \$25 and costs and Madron \$15 and costs.

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THE SURVEY

ISSUED MONTHLY FOR THE PERSONNEL OF THE BUREAU OF BIOLOGICAL SURVEY, U. S. DEPARTMENT OF AGRICULTURE
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Vol. 19 Washington, D. C., November-December, 1938 Nos. 11-12

GREETINGS FROM THE CHIEF

ANOTHER YEAR of strenuous endeavor for the staff of the Biological Survey in the conservation field is nearing an end, and it seems appropriate to pause at this holiday season and review its record.

As I look back it seems to me that 1938 has been a year of solid accomplishment--not so spectacular, perhaps, as some previous years but still one that we can remember with pride. Needless to say, the accomplishments would have been far less impressive without the enthusiastic and whole-hearted efforts of the rank and file of our organization.

Looking forward, it seems that even more interesting and fruitful work is just ahead.

I wish to thank each of you for your efforts in forwarding our program and to wish all a joyous Christmas and a happy and busy New Year.

Washington, D. C.
December 5, 1938.

Ira N. Gabrielson

GENERAL NOTES

In the West.-- On November 30 Associate Chief Henderson left for Phoenix, Ariz., to attend the Bureau meeting on predator and rodent control work from December 5 to 9. From there he planned to continue on to various points in California, Oregon, Washington, and Minnesota, to inspect the Bureau's work and confer with field officers and cooperators. He expects to return about December 24.

Meet with Land-Grant College Association.--Dr. W. B. Bell and Stanley P. Young attended the meeting of the Association of Land Grant Colleges and Universities, held in Chicago, November 14 to 16.

Dr. John Charles Phillips, who was a member of the Advisory Board, Migratory Bird Treaty Act from 1929 to 1931 and author of Technical Bulletin No. 61, Wild Birds Introduced or Transplanted in North America, published by the Biological Survey in 1928, died from heart failure while hunting near Hanover, N. H., on November 14. He was born in Boston, Mass., November 5, 1876, graduated from a scientific course at Harvard University in 1899, from the medical school of the same institution in 1904, and from the Boston City Hospital in 1906. He was a student of Professor W. E. Castle and collaborated with him in some of the genetics investigations that so signalized that period in American biology. This interest no doubt was what led Dr. Phillips to undertake, later, studies in hybridization of wild fowl. He never practiced medicine but devoted his time largely to sport and conservation and to many writings on these subjects, some of them monumental. A Natural History of the Ducks, in 4 thick and lavishly illustrated volumes (1926), brought him the William Brewster Memorial Award for the most important work on American ornithology of its period. Of special Biological Survey interest is the volume on American Waterfowl published in 1930 in collaboration with Frederick C. Lincoln. Dr. Phillips supported many conservation movements, being President of the League of American Wildfowlers, Director of the National Association of Audubon Societies, for six years President and later Director of the Massachusetts Game and Fish Association, a member of the Board of Trustees for Massachusetts public reservations, Chairman of the Massachusetts Conservation Council, and Chairman of the American Committee for International Wildlife Protection. He was a Fellow of the American Ornithologists' Union, Trustee of the Boston Society of Natural History, President of the Peabody Academy of Science, and Associate Curator of Birds in the Museum of Comparative Zoology.

Give \$2,277 to Community Chest.--Exceeding by more than \$300 the Bureau quota, 270 members have pledged \$2,277.86 to the 1939 community chest for Washington and suburbs. The total is 116.21 percent of the quota. The Bureau committee that handled the campaign consisted of Mr. Henderson and Dr. W. B. Bell, chairman and vice-chairman, with the following "keymen": Miss Ruth Richards and Miss Viola Schantz, Division of Wildlife Research; Mrs. Eva C. Ellodge, Federal Aid; Miss E. Nell Scruggs, Land Acquisition; Mrs. N. Beth Woodin, Wildlife Refuges; Miss Gladys Torson, Construction and C. C. C. Operations; Mrs. Burnetta E. Muth, Game Management; Miss Clona C. Whitaker, Predator and Rodent Control; Miss Loretta Somerville, Administration; and Howard Zahniser, Public Relations. Miss Wilma I. Aho served as secretary.

W. P. A. Supervisor Goes to F. C. I. C.--Ray C. Hoffman, W. P. A. supervisor of the Biological Survey's current clerical project in Washington since its beginning on July 5, 1938, resigned on November 28 to accept appointment as junior administrative assistant in the administrative audit section of the Federal Crop Insurance Corporation. Mr. Hoffman also supervised an earlier W. P. A. project in conjunction with his duties as a Bureau senior clerk in Washington working on refuge W. P. A. activities in 22 States. He prepared the application for and organized the current project and devoted his whole time to supervising the project which includes 85 or more W. P. A. employees bringing back work up to date in various sections. J. R. Castell is acting supervisor.

ADMINISTRATION

Memoranda to Field Officers Issued.--Following is a list of the memoranda issued in the "Administrative Field Office" (AFO) series since the last (September-October 1938) issue of THE SURVEY:

- No. 126. Amendment 1. Procedure for placing orders for contract purchases with regional offices.
- No. 249. Reports on services of probationary employees.
- No. 250. Display of flag on buildings or grounds of field stations.
- No. 251. Delivery of materials and supplies under Procurement Division contracts which fail to meet specifications.
- No. 252. Disbursement of migratory bird hunting stamp funds.

The following memoranda to field officers have been issued in the "Contracts" series:

- No. 14. Amendment No. 1 (Revised) Supersedes Amendment No. 1 dated February 5, 1938. Blanket clearance for the purchase of special lubricating oil for Diesel-powered equipment.
- No. 35. Supplement No. 1. Contract covering a special nonsensitive type blasting powder and primer and booster charges for use therewith; for the period September 15, 1938, to June 30, 1939. (Class 4; Supplement No. 3)
- No. 53. Proposed consolidated contracts for gasoline, burner fuel oil, and Diesel engine fuel oil requirements in the United States, for the fiscal year 1940.
- No. 54. Changes in Procurement Division contracts.
- No. 55. Supersedes No. 10, dated October 13, 1937. Procurement of fire extinguishers.

PUBLIC RELATIONS

Broadcasts on Wild Turkeys.--On November 25, the day after Thanksgiving, Howard Zahniser discussed wild turkeys in his Farm and Home Hour broadcast. After describing the early abundance and the present status of the turkey, he told of current work in restoration and propagation. The talk was entitled, "Keeping the Wild Turkey Wild."

Appointed.--Three new positions have recently been filled in the Section of Current and Visual Information. Effective November 16, Miss Alice Jean Turkish was appointed junior clerk-typist to assist in work on photographs, and effective December 1, Miss Ethel B. Homsher and William H. Schmidtman were appointed as junior clerk-stenographer and senior photographer, respectively. Mr. Schmidtman is detailed to the Department's photographic laboratory, where he is doing Biological Survey developing and

printing and supervising W. P. A. employees on the Bureau project.

Transferred.--Mrs. Dorothy Alarid and Miss Hazel A. Moore, W. P. A. employees formerly assigned to the Section of Current and Visual Information, have been assigned to the Division of Wildlife Refuges and the Division of Land Acquisition, respectively. Lewis E. Martin, formerly W. P. A. photographer, has also been assigned to the Division of Land Acquisition. There are now two photographers and three clerical helpers assigned by the W. P. A. to bring the Bureau's photographic work up to date.

Official Publication, a copy of which may be obtained from the Division of Public Relations, has been issued as follows:

Officials and organizations concerned with wildlife protection, 1938.

Compiled by Frank G. Grines, Administrative Assistant, Division of Public Relations. Miscellaneous Publication No. 329. 15 p.

Oct. 1938. Received. Nov. 1.

Outside Publications.--Articles by members of the Survey appearing in outside publications have been reported as follows:

Burleigh, T. D. The relation of birds to the establishment of longleaf pine seedlings in southern Mississippi. Southern Forest Expt. Sta. Occasional Paper No. 75. July 27, 1938.

Day, A. M. The Pittman-Robertson Bill. Assoc. Sportsman 5 (8): 2. Oct. 1938.

Goldman, E. A. A new woodrat of the genus Hodomys. Jour. Wash. Acad. Sci. 28: 498-499. Nov. 15, 1938.

----- List of the gray foxes of Mexico. Jour. Wash. Acad. Sci. 28: 494-498. Nov. 15, 1938.

----- A new pocket mouse from Colorado. Jour. Mammal. 19: 495-496. Nov. 1938.

----- Notes on the voles of the Microtus longicaudus group. Jour. Mammal. 19: 491-492. Nov. 1938.

----- Three new races of Microtus mexicanus. Jour. Mammal. 19: 493-495. Nov. 1938.

Hicks, L. E. A unique population of water birds in northern Ohio, 1937. Wilson Bul. 50: 197-200. Sept. 1938.

Jackson, H. H. T. Concession for elephant seal taking in Kerguelen and other islands. Jour. Mammal. 19: 502-503. Nov. 1938.

Lay, G. B. Rat campaign should not be delayed. Agr. Leaders Digest. Nov. 1938.

Marshall, W. H. (With Lee Kay, Utah State Dept. Fish and Game) Notes on the sandhill crane near Tremonton, Utah. Utah Acad. Sci., Arts, and Letters 15: 89-90. June 1938.

Mills, E. M. Tree injury by squirrels. In Leaf-feeding Insects of Shade Trees, Mass. Agr. Expt. Sta. Bul. No. 353, p. 79-80. July 1938.

- Murie, O. J. Wilderness and wildlife. The Living Wilderness 3 (3): 5.
Dec. 1937.
- Saylor, L. W. Seven new neotropical scarab beetles. Biol. Soc. Wash.
Proc. 51: 185-190. Nov. 3, 1938.
- A new melolonthine scarab beetle from Brazil. Biol. Soc. Wash.
Proc. 51: 135-136. Aug. 23, 1938.
- Taylor, W. P. A short list of wildlife publications with special regard
to Texas. Texas Game, Fish, and Oyster Comm. Bul. No. 14.
30 p. Oct. 1938.
- Zahniser, H. Indoors and out. Nature Mag. 31: 519, 559. Nov. 1938.

Press and Radio Information and Addresses, copies of which (chiefly in mimeograph) may be obtained from the Division of Public Relations, have been issued as follows:

- More furs of better quality aim of new research program. Press statement 671-39. Released November 2.
- Pocket mice pocket farmers' profits but predators are police, investigators find. Press statement 673-39. Released November 2.
- Game agents arrest oyster boat captain with 51 wild ducks. Press statement 685-39. Released November 4.
- Directory shows organized interest in wildlife work. Press statement 725-39. Released November 8.
- Wild duck sellers jailed. Press statement 786-39. Released Nov. 12.
- Violators' fines swell game propagation fund. Press statement 799-39. Released November 15.
- Suggests ways for hunters to cooperate with farmers. Press statement 790-39. Released November 19.
- Fined \$100 for hunting doves over baited field. Press statement 857-39. Released November 25.
- False hunting license brings heavy sentence. Clip sheet No. 1065. Released November 27.
- Federal Refuges use land unsuited for cultivation. Clip sheet No. 1066. Released December 4.
- More information needed on fur farming business. Clip sheet No. 1066. Released December 4.
- Keeping the wild turkey wild. Radio talk by Howard Zahniser. National Farm and Home Program. November 25.
- Feed of range game. Farm flash. Released July 18. (Omitted from earlier list.)
- Hunter vs. farmer. Farm flash. Released December 1.
- Farmer-hunter co-op. Farm flash. Released December 2.
- Raising more game. Farm flash. Released December 3.

WILDLIFE RESEARCH

Wildlife Surveys

Reports on Iowa Mourning Doves.--Thomas G. Scott, leader of the Iowa Cooperative Wildlife Research Unit, reports that Elliott McClure, graduate student, continued observations on the nests and young of the mourning dove in the vicinity of Lewis, Iowa, until October 15 when the last young left the nests. Mr. McClure reports that on 222 acres 1,108 nests were nested in 1,464 times, bearing 2,777 eggs and producing 1,502 young birds.

Prepare Inexpensive Colored Slides.--Colored slides are quite useful in wildlife extension work in the field, but the expense of preparing suitable ones sometimes is prohibitive. A less expensive method, used with success by Thomas G. Scott and Dr. H. D. Tate, Iowa extension entomologist, while not new, has possibilities in conservation education that do not seem to have been widely recognized. Reproductions were made of colored plates on color film, using a camera with a 1.9 lens. To shorten the focal distance, the camera was fitted with a lens taken from a 25-cent pair of reading glasses. The film was processed and cut into the individual reproductions, slides were then made by mounting the frames between thin plates of glass. The slides, which cost less than 20 cents each, are preferred to the film strip, because they insulate the film from the heat of the projector and protect it from damage.

Oregon Opens Season on Antelope.--Arthur S. Einarsen, leader of the Oregon Cooperative Wildlife Research Unit, reports that an open antelope season, October 28 to November 1, set by the Oregon State Game Commission and suggested by the Oregon Cooperative Unit, in three counties of southern Oregon, the first in 25 years, was successful and not disastrous, as some predicted. While 1,000 permits for hunting were provided, only about 300 were actually issued, resulting in a kill of 165 antelope from an estimated population of 15,000. An opportunity was taken to obtain weights and measurements on about 100 antelope.

Alabama Dove Nesting Declines in September.--Nesting of mourning doves declined sharply following cool weather about September 15, according to a report by Dr. Allen M. Pearson, leader of the Alabama Cooperative Wildlife Research Unit. On October 1, only three nests were active and under observation at Auburn. The latest nestlings for which records were available took flight on October 6. It seems probable that the early hatched 1938 nestlings contributed to the number of late summer and early fall nests. During the spring, 21 of the early hatched nestlings were held in captivity, and records on weight and plumage change were taken at weekly intervals. These birds attained adult plumage within 10 to 19 weeks. Six of the 21 birds lost all immature plumage at 14 weeks of age.

Report on Deer Project.--October was an extremely dry month in Alabama, and Dr. Pearson reports that only one small rain was recorded

at Bellamy. Dry weather caused a rapid advance in fall conditions, and all plant growth was materially restricted. Tom Atkeson continued belt transect and plant frequency work on areas that were cut-over at different ages. Data were taken to determine the relative abundance of deer food plants in relation to logging. During the month, Mr. Atkeson saw a total of 218 deer, which were grouped as follows: 10 bucks, 90 does, 50 fawns, 25 yearlings, and 43 unidentified. The velvet had disappeared from the antlers of all bucks observed, with the exception of one spike buck. An unusually large crop of fawns has been reported this season, and though about half of them had lost their spots in October, some very young fawns were seen throughout the month.

Talks on Texas Surveys.---Dr. Walter P. Taylor, leader of the Texas Cooperative Wildlife Research Unit, talked to the landowners along the Navasota River, Grimes County, Tex., on "The Texas Big Game Survey." On October 26, he discussed the "Walker County Wildlife Survey" at the Rotary Club meeting in Huntsville, Walker County, Tex.

Studies Feral House Cats.---During October, Paul V. Jones, graduate student in wild game at the Texas A. and M. College, traveled 294 miles on the highways in Brazos County, Tex., in search of feral house cats, covering most of this distance between the hours of 9 p.m. and 1 a.m., on several nights. He encountered only nine cats (1 to each 32 miles), none of which was taken. Analyses of stomach contents of two cats brought in by Dr. Taylor and Charles Lehmann, Graduate student, revealed the presence of cotton rats (Sigmodon hispidus texianus), pocket mice (Perognathus hispidus texianus), a frog (Rana sp.), orthopteran remains, and grass. Nematodes and cestodes were found attached to the walls of both stomachs.

Visit Mammal Laboratory.---The following visitors used the mammal laboratory in November for study of specimens and records or to obtain information through conferences: Raymond M. Gilmore, Rockefeller Foundation, New York; Dr. H. C. Clark, Gorgas Memorial Institute, Ancon, Panama; and Dr. G. W. D. Hamlett, Carnegie Institute of Washington Laboratory of Embryology, Baltimore, Md.

Food Habits Research

Entomologists Hold Meeting.---Dr. Clarence Cottam, Dr. W. S. Bourn, and L. W. Saylor attended the annual meeting of the Eastern Branch of the American Association of Economic Entomologists held at Baltimore, Md., November 17. Part of the program dealt with mosquito control and wildlife conservation.

T.V.A. and Mosquito Control.--- The last week in October Dr. Cottam went to Knoxville, Tenn., to confer with officials of the Tennessee Valley Authority on coordination of mosquito control with wildlife conservation.

Meetings were held with officials at Knoxville, Chattanooga, and Wilson Dam. Studies were also conducted on the wildlife development possibilities of the Wheeler Migratory Waterfowl Refuge.

Bureau Methods Producing Results.--In October, Dr. Cottam inspected W.P.A. drainage projects on coastal areas in Connecticut and Rhode Island, his purpose being to help correlate mosquito control with wildlife conservation. Conferences were held with officials, and recommendations made. It was found that supra-normal rainfall had caused a tremendous increase in the number of mosquitoes in most places along the coast, but where the water tables of the marshes had been raised to prevent drainage of permanent ponds the areas had been free of mosquitoes.

Motion Pictures Taken.--E. R. Kalmbach spent November 1 to 6 taking motion pictures to complete the film on avian botulism and bring this subject up to date pictorially.

Deer Eat Tree Mosses.--Walter A. Gresh, of the West Virginia Game Commission, brought in a specimen of Usnea evansii (tree mosses) to the Washington laboratory on October 18 and reported that this species of lichen was unquestionably being used to a considerable extent as a deer food in various areas in West Virginia.

Biological Appraisals Made.--During the early part of October, C. C. Sperry, of the Denver office, spent considerable time in the vicinity of Flagstaff, Winslow, Springerville, and Phoenix, Ariz., inspecting areas to determine their desirability for development under the provisions of the Pittman-Robertson Act.

Waterfowl Abundant in California.--Johnson Neff spent much of October in the field reviewing with county agricultural agents in California the control of bird depredations. Experimental work with bombs as frightening devices was designed to drive blackbirds out of given areas. Mr. Neff also visited a number of gun clubs and reports that waterfowl were abundant at numerous places. At the Sacramento Refuge, conditions appeared unusually favorable.

Assists in Duck Sickness Study.--During October, C. S. Williams made tests for total salt content and examinations for microscopic organisms on a series of water samples that he and Dr. Quortrup collected in duck-sickness areas in Montana and North Dakota. This information will be correlated with actual sickness conditions in these areas. At the Bear River Refuge Mr. Williams is continuing the study of Canada goose feeding habits, which change strikingly with changes in the season and with varying water levels.

In Washington.--Clarence A. Sooter, stationed at the Malheur Migratory Bird Refuge, Burns, Oreg., visited Washington for 2 days the last week of November to confer with officials regarding the research program at that refuge.

Distribution and Migration of Birds

Record Returns from Hunters.--Returns for ducks shot during the present season continue to come in on the average of 100 a day. A new record established since the last issue of THE SURVEY was 228 received on December 5.

Fall Status of Waterfall.--Questionnaires are being returned in large numbers on the fall status of waterfowl. No summary will be available until all have been received, the time limit having been set at January 1.

Progress of Banding Work.--Since July 1 more than 150,000 banded birds have been reported, a large number of which are ducks. More chimney swifts have been reported banded than throughout 1937. The largest total for any previous year was 29,000, while more than 26,000 have been banded since July 1.

Interesting Returns from Banded Birds.--The following are returns of outstanding interest from banded birds, showing band number, place and date of banding, and place and date of recovery:

Arctic Tern:

548286, Labrador, Turnevik, 7/23/28	Same locality, 7/30/38 (Collected as scientific specimen)
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Mallard:

38-621607, N.Y., Rochester, 11/2/37	Sask., Abernathy, 9/19/38
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Blue-winged Teal:

38-624914, S. Dak., Sand Lake Refuge, 7/26/38	Colombia, Bogota, 11/13/38
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Pintail:

38-611241, La., Avery Is. 12/11/37	Calif., Alvarado, 10/19/38
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Lesser Scaup:

A545347, Atla., Lamont, 9/28/38	Va., Cherry Hill, 11/24/38
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Ring-necked Duck:

38-612705, La., Avery Is., 12/18/37	Vt., Highgate Springs, 10/23/38
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Western Willet:

34-404684, Atla., Bashaw, 7/10/38	Costa Rica, Guanacaste, 10/1/38
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Marsh Hawk:

36-670823, N.Dak., Upham, 7/10/38	B. C., Edgewood, 9/1/38
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Fur Resources

Attends Meetings in Chicago.--Chas. E. Kellogg left Washington November 24 for Chicago, Ill., to attend the meeting of the American Society of Animal Production and the Annual Meeting and Pelot Show of the Karakul Fur Sheep Registry. While at these meetings he had conferences with Dr. L. A. Maynard, collaborator, Laboratory of Animal Nutrition, Cornell University, Ithaca, N. Y., and Dr. E. B. Forbes, director, Institute of Animal Nutrition, Pennsylvania State

College, State College, Pa., relative to cooperative nutrition work on fur animals and rabbits. At the meetings of the Karakul Fur Sheep Registry, Mr. Kellogg spoke briefly on the new research work on fur-animal fibers and requested the breeders to make a particular effort to fill out the Survey's fur-farming census questionnaire.

In Chicago Mr. Kellogg had an opportunity of meeting with the Chicago Rabbit Club when Director George S. Templeton, of the U. S. Rabbit Experiment Station, Fontana, Calif., discussed the nutrition of rabbits.

Donate Rabbits to Dairy Industry.---Twenty-one rabbits were recently shipped from the U. S. Rabbit Experiment Station, Fontana, Calif., to the Bureau of Dairy Industry, at the National Agricultural Research Center, Beltsville, Md. These rabbits, which were donated to the Division of Nutrition and Physiology for cattle feeding experiments, were shipped in five crates, feed and water being supplied during the trip. The animals arrived at Beltsville in splendid condition, and the long trip seemed to have no detrimental effect upon their health. This is the second such shipment to the Bureau of Dairy Industry.

Metabolism Studies Begin.---Under a Bankhead-Jones grant, cooperative studies of metabolism in fur animals will soon begin at Cornell University under the direction of Dr. L. A. Maynard, in charge of the institution's Nutrition Laboratory. Foxes and minks will be studied to get fundamental information on the digestibility of feeds consumed and also to determine the vitamin requirements of these animals.

Foxes Turned Loose on a Range.---Chas. F. Bassett, director, U. S. Fur Animal Experiment Station, Saratoga Springs N. Y., reports that 40 mature vixens, retained as breeders, were liberated in a 5-acre range in order to condition them before the breeding season begins next January. It was interesting to note the rather bewildered actions of foxes that had been confined to small pens for several years.

Visit Canadian Fur Farms.---Frank G. Ashbrook, in charge Section of Fur Resources, Chas. E. Kellogg, Dr. John I. Hardy, and Dr. Walter Wisnicky made an extended trip October 22 to November 10 through Quebec Province and Prince Edward Island, Canada, studying fur farming developments in that country. Dr. Hardy, Fiber Specialist for the Bureau of Animal Industry, under a cooperative agreement with the Bureau of Biological Survey is directly responsible for the recently inaugurated studies of fur-animal fibers. Dr. Wisnicky was recently appointed by the Wisconsin State College of Agriculture to direct the fur-animal research work there. Two days were spent reviewing the experimental work of the Dominion Fox Experimental Ranch at Summerside, Prince Edward Island, where Dr. G. Ennis Smith, the superintendent, permitted the group to examine many experimental foxes. At Summerside they also inspected two large fox-pelt marketing associations. On October 31 Messrs. Ashbrook, Kellogg, and Wisnicky addressed the Summerside Fox Study Club.

After visiting the ranches of several of the more prominent fox breeders on the Island, where much information on feeding, breeding, and housing was obtained, the men attended the Live Fox Show and Fur Farmers Meeting at Charlottetown. On the return trip they stopped at a fox farm in Quebec that specialized in freak colors of silver foxes; then continued to Boston, Mass., to visit the New England Mink & Fur Breeders Association and Dr. Henry Pinkerton of Harvard Medical School, Cambridge, Mass., who is studying virus diseases of foxes. Mr. Ashbrook and Mr. Kellogg went to the Fur Animal Experiment Station at Saratoga Springs, N. Y., to confer with the Director Bassett on the progress of the W.P.A. projects. Before returning to Washington, they conferred with Dr. L. A. Maynard, in Ithaca, N. Y., on the recently established cooperative work on the metabolism of fur animals under a Bankhead-Jones grant.

Visitors at the Station.--Dr. George Packard Berry, of the University of Rochester, Medical School, Rochester, N. Y., called at the Rabbit Experiment Station, Fontana, Calif., on October 18. Dr. Berry is doing experimental work with rabbits and was interested in the physical equipment at the station and the nutritional problems studied.

W. R. Dillon, Chief, Administrative Office, visited the Station on October 13 for a short time.

On October 18, visitors included Walter V. Woehlke, Indian Office, Washington, D.C.; Archie D. Ryan, U. S. Division of Grazing, Salt Lake City, Utah; and C. E. Faris, Indian Office, Washington, D.C.

Disease Control

Assigned to Harvard.--Dr. W. H. Armstrong has been assigned to investigational work in the Department of Pathology, Harvard University, Boston, Mass., for a brief period. While in the Northeastern States he is also spending a few days at the Fur Animal Experiment Station, Saratoga Springs, N. Y., making studies of carcasses of animals being pelted there.

Visits Mid-West Fur Farms.--Dr. J. E. Shillinger attended the Michigan-Ohio Live Fur Animal Show in Grand Rapids, Mich., on November 11. Later he visited fur farms in Wisconsin and northern Michigan, where farmers collaborated with Dr. Shillinger in the study of fur-animal diseases. This voluntary collaboration resulted in data on a large number of animals with regard to the course of infectious-disease outbreaks and the most desirable control measures.

FEDERAL AID TO THE STATES

Addresses Kiwanis Club.--R. M. Rutherford spoke at the meeting of the Kiwanis Club in Alexandria, Va., on November 17 on the program for Federal aid to the States in wildlife restoration.

Transferred.--Melvin O. Steen was transferred to the Division of Federal Aid on November 1, to become regional inspector in Regions 4 and 6, with headquarters at Milwaukee, Wis. Mr. Steen has had wide experience in selecting, acquiring, and developing refuges and was affiliated with the North Dakota Game and Fish Commission prior to his employment by the Biological Survey in 1934.

LAND ACQUISITION

In the Field.--Mr. Dieffenbach, accompanied by A. A. Riemer, left Washington on October 1 on a field trip which embraced the attendance of condemnation proceedings at Washington, N.C., in connection with the Lake Mattamuskeet Refuge. They then proceeded to South Carolina and inspected refuges in that State; thence to Atlanta, Ga., where they conferred with Bureau officials and officials of the Bureau of Agricultural Economics relative to prospective refuge areas. They also inspected the Piedmont Refuge in Georgia, Kentucky Woodlands in Kentucky, and Noxubee in Mississippi. Department of Justice officials were contacted in connection with the Chautaugua Refuge in Illinois, and an inspection was made of the Alton Pool area.

Executive Orders Signed.--The President has signed executive orders establishing or affecting five refuges, as follows:

Breton Bird Refuge, in Louisiana, established on October 4,
Okefenokee Wildlife Refuge, in Georgia, modified on October 27
by excluding certain lands in Ware County.
Great White Heron Refuge, in Florida, established on October 27.
Waubay Migratory Waterfowl Refuge, in South Dakota, enlarged
on November 25.

The name of the Big Lake Reservation was changed to Big Lake Migratory Bird Refuge and certain lands were added to it on November 17.

Appraisals and Negotiations

Works on Case Closures.--In November Fred R. Kessler, senior administrative assistant, was at Waterloo and other points in New York in connection with case closures on the Montezuma Refuge.

Escape Hurricane.--Elmon Radway and Earl F. Gates were examining and appraising the proposed Monomoy Refuge on Cape Cod, Mass., in September and unfortunately were at that place during the hurricane that swept that section of the country. Although they were just outside its path, their work was somewhat handicapped by the catastrophe. Upon completion of this assignment Mr. Gates returned to Washington while Mr. Radway continued to Vermont to the proposed Mississquoi Refuge. He returned to Washington early in November.

Surveys and Maps

Returns from Bombay Hook.--Arthur A. Riemer has returned from Dover, Del., where he inspected the boundary surveys now under way on the Bombay Hook Refuge.

Map Work Progresses.--Acquisition status maps for the Bureau atlas on the scale of 1 inch to 1 mile have been completed and are available for printing and distribution for the following: Tule Lake Wildlife Refuge, in California; Bombay Hook Migratory Waterfowl Refuge, in Delaware; Camas Migratory Waterfowl Refuge and Minidoka Wildlife Refuge, in Idaho; Lacassine Migratory Waterfowl Refuge, in Louisiana; Rice Lake Migratory Waterfowl Refuge, in Minnesota; Squaw Creek Migratory Waterfowl Refuge and Swan Lake Migratory Waterfowl Refuge, in Missouri; Medicine Lake Migratory Waterfowl Refuge, Nine Pipe Reservation, Pishkun Reservation, and Willow Creek Reservation, in Montana; North Platte Reservation, in Nebraska; Bitter Lake Migratory Waterfowl Refuge, in New Mexico; Lake Mattamuskeet Wildlife Refuge and Swanquarter Migratory Bird Refuge, in North Carolina; Long Lake Migratory Bird Refuge, in North Dakota, and Turnbull Migratory Waterfowl Refuge, in Washington.

WILDLIFE REFUGES

Duck-Sickness Treatment Effective.--John C. Scharff, superintendent of the Malheur Migratory Bird Refuge, Oreg., reports that of a total of 2,251 ducks treated for botulism during an outbreak on the refuge in September, 1,621, or 72 percent, recovered. Pintails, mallards, green-winged teals, shovelers, and baldpates, in the order named, were the chief species affected.

Plumed Quail Make Comeback on Malheur.--Plumed quail are making a comeback on the Malheur Refuge, Superintendent Scharff reports, 37 having been seen to date in the Blitzen Valley unit. None of these birds were seen last year, and it was believed that the severe winter of 1936-37 had killed them all.

Malheur Refuge Exhibit Well Received.--The Malheur Refuge personnel displayed an interesting exhibit at the recent Harney County Fair in Burns, Oreg., Mr. Scharff reports. The earth floor of the space allotted the refuge was converted into a natural-looking marsh with a pond, tules, canes, and rye grass turf. On a green-tinted background, a large banner informed the public of the sponsor of the exhibit, maps showed points of interest on the refuge and the flyways of North America, and a pair of each of the most important species of waterfowl of the refuge were shown in an enclosure. It was estimated that 5,000 persons saw the exhibit.

New Bird Records.--In a recent quarterly report, George L. Girard, refuge manager of the Ninepipe, Pablo, Pishkun, Willow Creek, and Benton

Lake Refuges, Mont., advises that several birds visited these refuges this summer and fall for the first time in several years. The new species were western willets, on the Pablo and Ninepipe Refuges; marbled godwits, on the Ninepipe Refuge; sharp-tailed grouse, on the Pishkun Refuge; and upland plovers, on the Pablo Refuge.

Waterfowl Plentiful on Waubay Refuge.--Hundreds of geese stopped on the Waubay Migratory Waterfowl Refuge, S. Dak., during this fall's migration, Watson E. Beed, refuge manager, reports. Although white-fronted geese led in numbers, Canada geese were also abundant and several large flocks of blue and snow geese stopped in October. This is the first time these latter two species have stopped in any numbers during fall migration since the establishment of the refuge; and Mr. Beed expresses the belief that the pinioned geese on the refuge may have been an influencing factor in this. On October 3, careful counts revealed that there were at least 100,000 ducks on the refuge.

Hunters Visit Waubay.--During October, hunters from 16 States visited the Waubay Refuge, Mr. Beed reports. Many of the hunters had never before seen a refuge, and all expressed approval of the Bureau's efforts to conserve waterfowl at this point.

Reports Many Ducks.--The following report has been received from Refuge Manager Beed: "Once again the Waubay Refuge has justified its existence. On the opening day of the hunting season, the ducks entered the refuge by the thousands. By nightfall on October 1, Spring Lake, Hillebrand Lake, and that portion of Waubay Lake in our refuge were literally black with ducks. Sago pondweed, Ruppia, and prairie bulrush grew well this year and furnished much food. The daily turnover of ducks is very great. They rest on the refuge during the day and continue their migration at night, usually leaving between 5 and 7 p.m. The majority of the birds now are gadwalls, mallards, and pintails, but we also have large numbers of shovelers, teals, and baldpates."

Waterfowl Conditions Much Improved on Des Lacs.--The Des Lacs Migratory Waterfowl Refuge, N. Dak., is in excellent shape to begin the winter, Seth H. Low, refuge manager, advises. Enough water remains in the lakes and potholes to carry through the winter. The vegetation has made a remarkable comeback; areas where the plant growth was so sparse last spring that a bird could not conceal its nest now support grass a foot high. The waterfowl population on the refuge during the year was twice as large as it was the previous year, and the area produced many more birds this past summer than ever before.

Game Commission Meets at White River.--The October meeting of the Arkansas Game and Fish Commission was held at the headquarters of the White River Migratory Waterfowl Refuge, Howard A. Miller, refuge manager,

reports. After the business meeting, a trip of inspection was made over the refuge, including the headquarters building and the demonstration and quail-management areas. Considerable interest was shown by the members of the Commission in the water-control measures being constructed and in the progress that has been made to supply a source of food for waterfowl prior to overflow. The manner in which the Chute farm is being managed to attract and protect quail also received much favorable comment. The Commission has accepted an invitation to hold one of its monthly meetings each year on this refuge.

Bear Observed on White River Refuge.--While bear tracks have frequently been observed in the Scrubgrass area of the White River Refuge, the first bear was seen by refuge personnel on September 7, when one was observed to enter and swim a bayou not more than 200 yards distant. Comparing its tracks with tracks previously seen indicated that this bear was one of the smaller of a group of five. Its weight was estimated at 250 pounds.

Large Duck Concentrations on Sacramento.--Peter J. Van Huizen, refuge manager of the Sacramento Migratory Waterfowl Refuge, Calif., estimated that there were 400,000 ducks on the refuge during the latter part of October, of which about 85 percent were pintails and the rest mallards, teals, baldpates, gadwalls, ring-necked ducks, canvasbacks, redheads, lesser scaups, and others. Five species of birds not previously seen by him on the refuge were observed this fall--fulvous tree duck, Bonaparte's gull, Caspian tern, sora rail, and golden eagle.

Elk Arrive at Refuge.--A few elk began to arrive at the Elk Refuge, Wyo., the last of October, and on October 31 six cows and calves were on the butte near headquarters. By November 12 there were about 3,000 elk on the refuge, and 15 deer were reported in aspen groves along the south side of the Gros Ventre River.

Antelope Stray to Elk Refuge.--Almer P. Nelson, in charge of the Elk Refuge, states that, somewhat to his surprise, he recently saw two buck antelope on the area. He found later that they belonged to a "dude" ranch about 18 miles northeast of the refuge. The antelope had migrated of their own accord and were reported as making themselves at home in one of the grain fields.

More Waterfowl Reported.--More waterfowl are on the refuge this fall than have been there in a number of years. Canada geese staying on the area have increased about 50 percent over last year. Early in November 700 of these birds were counted on the Flat Creek marsh, and on the same day about 200 of the geese and a large number of ducks were observed on the beaver ponds along the south side of the Gros Ventre River.

Obtain Interesting Pictures.--For exhibition in the museum at Fort Niobrara Game Preserve, Nebr., Geno A. Amundson has obtained 7 pictures of

scenes at Fort Niobrara from John Anderson, who was a photographer at the fort in the early '80's.

Fish Received at Wichita Refuge.--The Tishomingo Federal Fish Hatchery, Tishomingo, Okla., supplied fishes for the lakes at the Wichita Mountain Wildlife Refuge, Okla., during October, as follows: 500 crappie, 6,000 green sunfish, 8,150 bass, and 134,450 bream. These fishes were planted in Lakes Quannah Parker, Burford, Jed Johnson, and Elmer Thomas.

CONSTRUCTION AND C. C. C. OPERATIONS

C. C. C. Inspectors to Meet in Washington.--A conference of all C. C. C. regional inspectors will be held in the Washington office on January 4, 5, and 6, 1939. Those who will probably attend are: O. W. Teckemeyer, Boston; Millard I. Frost, Atlanta; Arthur F. Miller, Omaha; E. H. Hackenberg, New Orleans; and Wilfred J. Gregson, Portland.

Visits Washington Office.--O. W. Teckemeyer, C. C. C. inspector with headquarters in the Boston regional office, conferred with Bureau officials in Washington on November 21.

Enrollees Hunt Treasure.--When Charles Sheldon BF-2, Nev., was established, some concern was expressed as to whether or not the enrollees would remain satisfied, being so far from town and without the usual recreational facilities available. Camp Superintendent L. G. Creager reports that contrary to expectation, the boys were enthusiastic about the refuge and many expressed a desire to return next year. Most of them took an active interest in hunting opals in the famous Virgin Valley opal fields. W. J. Gregson, the regional C. C. C. inspector, states that the enrollees preferred to remain at the refuge, hunting hidden treasure, than to make long trips to town in the name of recreation. He added that the boys became confirmed prospectors and want to return next summer to continue their opal hunts. Hunting arrowheads was another favorite pastime. A popular spot with the boys was the 40 by 60 foot stone swimming pool, located within the camp area, which is filled by a steady stream of warm water from a hot artesian well.

Inspects Work in the West.--P. S. Munk Pedersen left Washington on November 25 on an inspection trip through Regions 1 and 2. He will inspect the bait-mixing plant under construction at Pocatello, Idaho, as well as C. C. C. activities at the Bear River, Tule Lake, Charles Sheldon, Hart Mountain, Malheur, and Sacramento Refuges. He will also visit the regional office in Portland. Mr. Pedersen is expected back in Washington December 16.

Movie Star Visits Camp.--Wallace Berry, famous movie star, visited the Bear River (Utah) Refuge in November. His monoplane was forced down near the refuge while he was en route to Ogden. The actor inspected the refuge with Vanez T. Wilson and was enthusiastic concerning the work the C. C. C. had done for the preservation of wildlife.

Field Personnel Changes.--L. D. Longley has replaced C. H. Wilson as camp superintendent at Swan Lake Camp BF-2, Mo. James A. Niedeck, Camp superintendent at Tuckahoe Camp BF-1, N. J., since its establishment in October, resigned to accept employment in private business. Charles S. Sargent was appointed in his stead. Eugene E. Frazier succeeded W. H. White as camp superintendent at Sabine Camp BF-1, La. L. G. Creager, camp superintendent at Charles Sheldon, Nev., during the eleventh period, now heads the side camp at Boulder Canyon, Nev.

Resigns.-- Mrs. Betty Grossman, who has been in the employ of the Bureau in connection with its C. C. C. activities since August 5, 1935, resigned on November 30.

GAME MANAGEMENT

Illegal Dove Hunters Fined.--As a result of cooperation with Maryland authorities two persons were arraigned and fined \$100 with costs of \$31 each in Federal Court at Baltimore on November 22, for hunting and killing mourning doves by aid of feed in Anne Arundel County on September 1. Three other individuals apprehended at the same time were fined \$10 each for hunting mourning doves with shotguns capable of holding more than three shells at one loading.

Duck Trapper Fined on Birthday.-- A resident of the Eastern Shore of Virginia who had trapped ducks was arraigned in Federal Court at Norfolk, Va., on November 14, which incidentally happened to be his eightieth birthday. The court indicated severe punishment was merited but imposed a fine of \$50. Failing to pay the fine, the trapper was committed to jail.

Night Hunters Sentenced.-- Three persons apprehended by a U. S. deputy game warden for hunting ducks at night in Delaware County, Pa., on November 17, were prosecuted in State court in cooperation with a State game protector. One was fined \$25, the others sentenced to jail for 31 days each. Hunting privileges of one were also revoked for 3 years.

Use Motorboats in Duck Hunting.-- Two persons apprehended in Durkline County, Mo., on November 13, by State conservation agents and a Federal agent, one for killing ducks from a motorboat and the other for pursuing waterfowl with such craft, were fined \$25 each with costs of \$12.40 each when arraigned in State Court. Both hunters' guns were confiscated.

Close-Season Hunters Fined.--Two Texas residents, one charged with killing a duck, and the other with killing a goose in close season, arraigned in State court at Henderson, Tex., on November 12, were fined \$100 each with costs of \$12 each. Federal and State officers obtained the evidence.

Killing geese in close season resulted in a resident of Malone, Tex., being fined \$75 with costs of \$11 when arraigned in State court on November 5, the case being obtained by State and Federal officers.

Used Bait, Fined.--- Two persons hunting waterfowl by means of bait on Rehoboth Bay, Del., on November 4, taken into custody by State and Federal officers, were fined \$50 and \$25, when arraigned in State Court. Another hunting with a rifle was fined \$25.

Killed Doves from Auto.---On evidence obtained by a State warden and Federal agent, a resident of Dallas, Tex., arraigned in State court on November 3, pleaded guilty to killing mourning doves from an automobile and was fined \$50, with costs of \$11.

Lacey Act Violator Fined.---A fur dealer of Omaha, Nebr., who pleaded guilty in Federal Court on November 2 to purchasing furs from animals illegally taken in Iowa and transported to Nebraska contrary to the Lacey Act, was fined \$50 with costs of \$22.50.

Early Hunters Sentenced.---Seven cases relating to hunting mourning doves prior to 7 a.m. were disposed of in Federal Court at Los Angeles, Calif., on October 31. Fines were assessed in four cases as follows: \$10 (2), \$25 (1), \$50 (1). The other cases were disposed of as follows: 1 year probation (1), dismissed (1), not guilty (1).

Eight other cases involving the same offense were closed in Federal Court at San Diego on November 18 by fines of \$10 each.

Motorboat Hunters Fined.---Three Michigan residents who hunted wild ducks from a motorboat at Fish Point on October 28 were apprehended by State and Federal officers and taken into State court, where they were fined \$50 each and costs. Their shotguns were ordered confiscated.

A resident of Oregon apprehended by Federal and State officers at Tule Lake, Calif, for shooting ducks from a motorboat also on October 28, was fined \$75 when arraigned in State Court.

Fined for Illegal Attempt to Ship Pheasants.---A deputy State game warden and a Federal agent and deputy, while in the depot at Aberdeen, S. Dak., on October 26, found that a trunk being loaded for shipment to Chicago, contained the dead bodies of five female and seven male pheasants. The trunk was without shipping tags, the plumage and heads of the birds were not exposed so as to disclose the species and sex, and the trunk was not appropriately marked as to contents. The shipper was identified and taken into State court where he was fined \$120 with costs of \$6.30. The dead birds and the trunk were confiscated by the State.

Close Season Hunters Fined.---Two hunters were fined \$100 each in Federal Court at Creston, Iowa, on October 18, when they pleaded guilty to killing wild ducks during April 1938. Another defendant who hunted geese in close season arraigned at the same term was fined \$102.90.

Fined for Early Shooting.--On October 15 in Hancock County, Iowa, a State conservation officer, a Federal agent, and a Federal deputy apprehended three persons. Two were shooting before 7 a.m. and one was using a gun not properly plugged. In State Court they were fined \$28.75 each and their guns ordered confiscated.

17 in Idaho Pay \$576 in Fines.--Seventeen offenders apprehended in Idaho during October and charged with violating Federal and State game laws were successfully prosecuted in State court, where fines totaling \$576 were assessed.

Wisconsin Violators Fined.--Following is the disposition of certain cases in State court in Wisconsin obtained during October by State and Federal officers: Hunting ducks before 7 a.m. \$50 (1), \$25 (11), \$10 (1); after 4 p.m. \$25 (1); no plug \$60 (1), \$10 (3). Total costs of \$76.50 were assessed.

Alaska Game Law Administration

Alaska Wildlife Agents Airminded.--Grenold Collins, Alaska wildlife agent, with headquarters at Nome, is the second agent of the Alaska Game Commission to take to the air in tracking down game-law violators. In commenting on his Arctic aerial patrol Agent Collins says: "The word has gone out all over the country that I am in the air and that I can land on any old bar or wherever I see a trap being set and that I don't hesitate to do so." Mr. Collins took delivery of a plane at Anchorage late in September and made his first aerial patrol to the Arctic coast via Seward, Fairbanks, and Nome. Agent Sam White stationed at Fairbanks has been patrolling his District by the air route since 1930. These pioneers have demonstrated the practicability of aerial patrol in enforcing more effectively the laws for the protection and conservation of Alaskan wildlife resources.

PREDATOR AND RODENT CONTROL

South Dakotans Propose Cooperative Law.--The Black Hills Livestock Protective Association, continuing its cooperation with this Bureau in the control of predatory animals in South Dakota, passed a resolution to present a proposed coyote State law providing financial cooperation between the State and the Biological Survey for predator control.

Organize Ground Squirrel Control.--A levy has been made by the county commissioners on all taxable property in Routt County, Colo., for the purpose of conducting organized ground squirrel control work next season under the supervision of the Survey. Adjacent counties are contemplating a similar levy.

Reports Pocket Gopher Dam in Texas.--C. R. Landon, of the Texas district, reports that a Hopkins County farmer recently noted a loss of \$490 due to pocket gopher damage to sweetpotatoes. After selling 7,000 bushels of the sweetpotatoes he found that 10 bushels out of every 100

were rejected because of pocket gopher scars. The current average price per bushel was 70 cents.

Texas highway authorities, says Mr. Landon, report that a heavy run-off in the fall of 1937 rushing through pocket gopher runs resulted in a highway embankment washing away near Maud, Tex. Traffic was detoured for several days and the damage repaired at a cost exceeding \$600. It is estimated that poison grain to control the pocket gophers in the entire county would cost \$800.

Renegade Wolf Captured-- Bearing out recent findings on peg-legged coyotes, Mr. Landon reports that E. G. Pope, of Palo Pinto County, Tex., worked 75 days after one crippled red wolf on a ranch in Stephens County. This animal is said to have destroyed \$1,000 worth of sheep and goats in less than a year. When finally caught in a blind water-set on October 17, this wolf proved to have one foot entirely gone, one broken hind foot, and two toes missing from the other hind foot.

Highlights from Reports Summarized--The following highlights are excerpts from the annual reports of district agents:

District Agent Robert B. Deen, headquartering at State College, Miss., reported that according to observations of Forest Supervisor Phillip H. Bryan, of the Kisatchie National Forest, near Alexandria, La., a considerable damage had been done by pocket gophers to young pine stock, large numbers of young pine seedlings being completely pulled into the runways of these rodents and the entire root system being removed from much of the older stock.

District Agent Thomas B. Murray reported that a coyote den had been found on the side of a railroad grade almost within the city limits of Shoshone, Idaho. Eight to twelve trains pass over this road daily, in addition to a section crew that passes several times a day.

From the Kansas-Oklahoma District, District Agent A. E. Gray reported that in Kingham County, Kans., a 10-row strip of trees was planted on an area infested with prairie dogs, which cut off 50 percent of 2 rows within a few days after the plantings.

District Agent Chas. G. Poole reported that mouse control became necessary on a ranch along the Pitt River in Modoc County, Calif., where predator-control work is not permitted because of the belief that coyotes will keep the mice in bounds.

District Agent Adolph S. Hamm related that in $2\frac{1}{2}$ years the Wyoming hunters have taken 1,059 peg-legged coyotes and made 410 cripples. During the fiscal year 1938 they took 416 and made 138. Studies reveal that peg-legged coyotes feed less upon rodents and rabbits than normal coyotes, and more upon the less fleet livestock.

District Agent Geo. E. Holman reported that the largest sheep outfit in Nevada suffered very little loss this year as compared with 8 to 10 percent losses in previous years. On the ranges of this company, a Bureau trapper took 130 coyotes in one month during the fall 1937.

Plague Found in Arizona for First Time-- On October 14, Senior Surgeon C. R. Eskey, of the Public Health Service, reported plague in-

in a pool of 98 fleas collected from 18 prairie dogs (Cynomys gunnisoni zuniensis) shot on September 28, 7 miles south of St. Johns, Apache County, Ariz. This is the first known infection in the State.

Game-birds on Increase in Utah.--District Agent R. Scott Zimmerman, of the Utah District, reports that a check of conditions in Box Elder County, showed a large increase in ground-nesting birds especially game birds, and thus indicated an apparent decrease in predators. In many places stockmen reported fewer losses of livestock on the range in comparison with past years. Sheepmen in the Wasatch Mountains areas, east of Salt Lake City, reported a great increase in game birds in the upland areas, also credited to the control of predators. The sheepmen say they have seen many more sage grouse chicks on their range this year, and they believe their losses in livestock have been reduced to a minimum. Mr. Zimmerman also reports that band-tailed pigeons appeared in great numbers during late summer in the vicinity of Monticello, San Juan County, Utah.

Rodents a Menace to Flying Field.--The Bureau has been called upon for assistance in eradicating rodents doing damage to the intermediate landing fields in Wyoming, under the jurisdiction of the Fifth Region, Civil Aeronautics Authority. The work has been assigned to District Agent Hamm.

To Study Effect of Poisons on Turkeys.--The Control Methods Research Laboratory, at Denver, Colo., is planning to undertake detailed studies as to the effect of rodent-control poisons on domestic turkeys. In the past there has been some difference of opinion as to the quantity of such poisons that would kill turkeys, and it is the purpose of this experiment to determine the facts.

